The OIL WEEKLY

JAN 5 19

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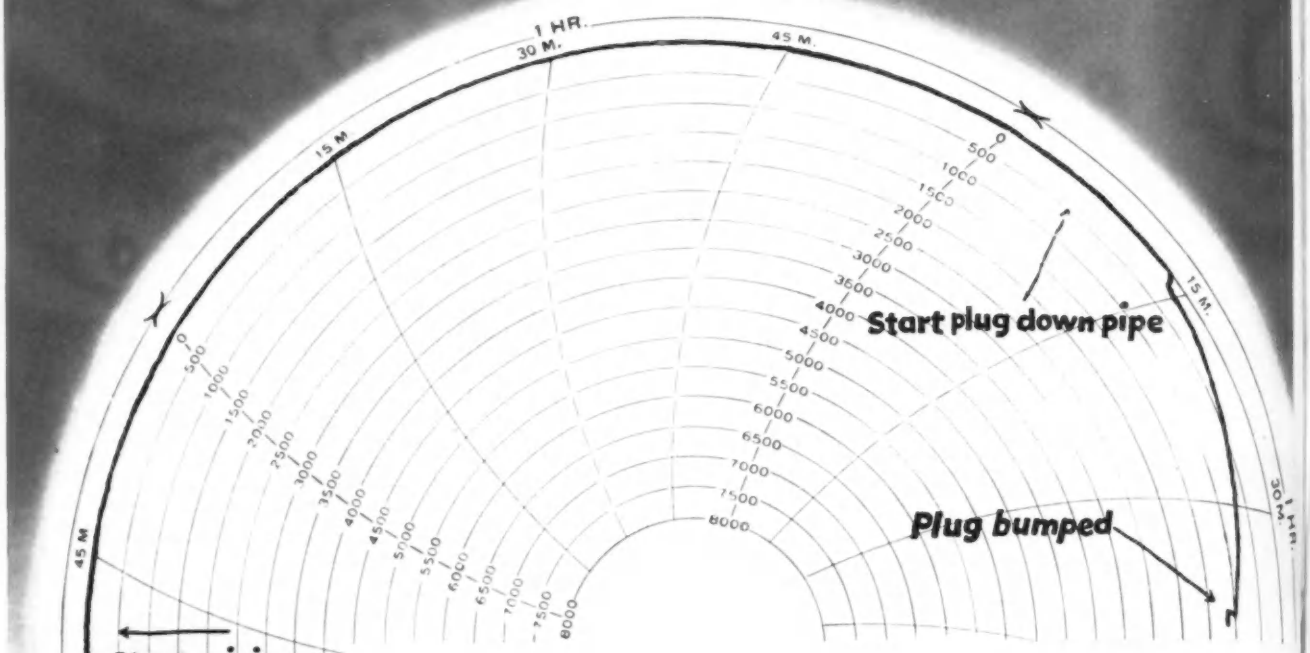

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PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

☆

LOOKING AHEAD

... with the Editor

ALTHOUGH gas drive has become common practice in secondary recovery in various fields of the United States, information on many phases of the use of gas to impart energy into a depleted formation, is lacking.

It is known that after flush production ceases in a sand or other formation, some of the oil remaining can be extracted through the application of artificial enegry. Gas drive is one form of such energy. Compressed gas pumped into oil containing horizons carries energy which is released and transferred to the oil, causing the oil to behave much as it did before original pressures were dissipated. Just how this happens, and how effective the process is is known only within limits.

R. J. Day and S. T. Yuster, of the Division of Petroleum and Natural Gas, School of Mineral Industries, The Pennsylvania State College, have recently concluded some experiments aimed at throwing more light on the mechanics of gas drive. Other experiments are in progress now.

In an early issue, these authors will discuss the first experiment under the title of "Mechanism of Gas Drive in Secondary Recovery of Petroleum," suitably illustrated with charts, figures, and formulae.

THE OIL WEEKLY

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Contents . December 25, 1944

Volume 116, No. 4

The Changing Panorama.....19

Technical and Feature Articles:

Texas Gas Conservation Suggestions Made.....30

Louisiana Refuses to Join Opposition to FPC; Schoeppel Heads Compact.....32

Cretaceous Formations in Canada.....36
By G. S. HUME

Water-Injection Wells and Their Behavior, Part 2.....44
By S. T. YUSTER AND J. C. CALHOUN, JR.

Exploration Continues Too Low in November.....50
By L. J. LOGAN

Hints for Production Men.....56

News and Departments:

Looking Ahead With the Editor.....17

Washington Roundup.....23
By BERTRAM F. LINZ

Markets, Statistics and Prices.....61

Pipe Line Review.....63

International Developments.....63

United States Field Operations.....64

United States Exploratory Completions.....73

United States Wildcat Starts.....74

Squeaks from the Bull Wheel.....76

Notes for the Equipment Buyer and User.....77

Index to Advertisers.....80

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The Changing Panorama

Stocks Withdrawal Reaches High Figure

REFINING plants east of the Rocky Mountains, the area which furnishes petroleum products to the European battle front, are not getting enough crude oil.

To fulfill their needs, refining plants in Districts 1, 2 and 3 have drawn upon their crude oil stocks for 2,132,000 barrels of oil during the four weeks between November 11 and December 9, 1944. This is an average withdrawal of 76,000 barrels daily. However, the rate of withdrawal has been increasing sharply, and in more recent weeks has been greater than at any time since early September. The rate of stocks withdrawal averaged but 11,000 barrels per day in the three districts during the week ended November 25, then rose to 36,000 barrels per day during the week ended December 2, then jumped to 152,700 barrels per day during the week ended December 9.

Drafts on stocks are occurring in all three districts. In District 1, more than 33,500 barrels per day have been taken from crude stocks in the last four weeks. Stocks of crude oil within District 1 now total but 16 million barrels.

Drafts on District 2 stocks have approximated 23,700 barrels per day average for the four weeks ended December 9, and now total but 71 million barrels. Stocks in District 3 went to storage during two of the four weeks, but during the latest week, the period ended December 9, were drawn upon for 122,000 barrels per day, thereby establishing a four-week average withdrawal of 19,000 barrels. Stocks in District 3 on December 9 totaled 105 million barrels, at which level they were approximately 12 million barrels below their level a year ago.

Youngsters—And Our Obligation

(AN EDITORIAL)

WHEN you see a group of little boys playing doesnt' your throat become constricted these days? Do not the unasked tears attempt to push through as you whisper under your breath . . . "God bless you, little fellows, and keep you always from the kind of Christmas your older brothers and fathers are facing in Europe, in Asia, in the South Pacific and Alaska"?

Isn't there something about those youngsters which you never observed before—something they know nothing about—something which your thoughts have put into them? And doesn't that something tear at your heart?

It has not been so many years when some of the older generation expressed grave fears concerning the generation now reaching manhood. And aren't we thoroughly ashamed of ourselves for ever doubting them, these boys whose lives are being offered up daily for us back home? We should be, because it is not the younger generation which has failed—it has been their fathers.

We who stay at home have an obligation which cannot be paid merely in bonds and in extra work, although those obligations should lie heavily on the hearts of all of us. We have an obligation to show courage, courage to raise our voices and direct our efforts against all attempts to destroy the institutions for which thousands are dying. We have an obligation to fight the attempts of the opportunist whose stock in trade now is the war.

Many of us felt that the most effective manner in which to raise our voices lay in the manner in which we voted in the recent election. But our obligation did not end there. It rests on us to keep up the fight, to insist that more acumen be shown in the handling of not only the domestic but the foreign affairs of our country, to the end that the men whose bodies lie in foreign soil may not have died in vain, and that their sons may live in a land of freedom and opportunity.

More East Texas Oil Is the Answer

UNLESS crude oil is produced in larger quantities, the industry is going to find itself acutely short of enough oil to keep refining plants in full scale operation. Because crude oil stocks are so very low, refiners cannot continue to depend upon them as a source of supply. Many refiners now do not have stocks upon which to draw, and have to depend instead upon current receipts for their daily needs. Production rates simply must be increased if refiners are to continue their output of products, which are so sorely needed at the battle fronts.

Now that additional shipping facilities are available, larger importations are expected from Venezuela. This will help. Nevertheless, it appears probable that more crude will have to be produced domestically. Districts 1 and 2 cannot produce more, so Texas likely will be called upon to furnish the additional supply.

Texas refining plants, especially those on the Gulf Coast, are having a difficult time getting enough crude to keep their plants running at full capacity. This is due to the lack of adequate shipping facilities to all parts of the state. It has been necessary to short some of these plants and to reduce barge shipments up the Mississippi, in order to keep the Big-Inch pipe line flow at capacity. The need would be met, and without shorting Texas refineries or barge movements northward, if more crude were available in Longview to feed the Big-Inch. If the East Texas field were allowed to produce one more day per month, the Big-Inch pipe line could be kept operating at full capacity, more crude could be moved by barge up the Mississippi, and refining plants on the Gulf Coast would have a supply sufficient to maintain their crude runs. There appears to be no other solution to the problem, for limited pipe line capacity prevents the movement of larger quantities from West Texas.

"Sharing the Waste" Seems Logical Idea

TO PROVIDE enough oil to meet war requirements, Texas now is producing above its maximum efficient productive capacity. Because of the absolute necessity of supplying the military with all petroleum products needed, there can be no quarrel with this practice although it is wasteful of an important natural resource.

However, many operators feel that the

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burden is being shouldered by comparatively few fields. This seems entirely unfair. Every field should "share" in this waste.

In this connection, Maston Nixon, independent operator of Corpus Christi and chairman of the industry's Crude Oil Supply Committee for District 3, has made a very timely and pertinent suggestion. At the Texas statewide oil hearing in Austin last week, Nixon urged the Railroad Commission to determine the efficient producing capacity of all fields producing more than 10,000 barrels daily, and then "prorate the waste" equitably among all these fields.

This would appear to be a logical and fair suggestion, although it probably will have to be tempered in accordance with the capacity of pipe lines to move crude from each field.

Top Problems for The Oil Industry

THESE are days in which national and state decisions of great importance to the oil and gas industry are in the making. One can put his fingers on several specific matters of the gravest concern to all those connected with oil.

The Anglo-American oil agreement, in whatever form finally accepted, so vitally affects the future of the industry in this country that it tops the list of matters challenging interest.

The extent of government control of the industry when the war is over is still questionable and should be constantly kept in mind, so that when the time comes, demand can be made for the return of full control to the industry itself.

There is still room for much improvement in conservation, especially gas. Definite changes are bound to come in this respect, probably next year, in some of the key states.

This is a short list, including only the top problems. It is time for oil men everywhere to think seriously on these questions and clear their own minds for action when that becomes necessary. The least one can do is to have an opinion and express it. Give the industry leaders the benefit of your thinking, and thereby help them work through to a satisfactory solution of the big issues.

☆

"New business enterprises must be promoted not by government subsidy but by human skill and courage, by strengthening instead of weakening the incentive to produce more and better goods."

—ENDERS M. VOORHEES,
Chairman, finance committee,
United States Steel Corporation.

Economic Policies And Postwar Plans

THE 500 million dollar program of postwar activity laid out by General Motors will inevitably lead to benefits for the oil industry. Motors and oil are so inseparable that progressive development in the field of either, affects the other.

The concept behind this vast reconversion program of General Motors is based upon these beliefs, as stated by Alfred P. Sloan, Jr., chairman of the board: "That the people of our country, as a result of the war, have found new inspiration in an opportunity to do something worth while and to work for the things they want; that economic 'fantasies' will have died with the war; that a changed attitude will inevitably reflect itself in new and different national economic policies that will broaden the field of business opportunity; that the expanded bureaucracy will be deflated with the end of the war—and because our people will, through this preview of a regimented economy, recognize its depressive influences and its restrictions on their freedom of action and opportunity."

Reduced to action, such a concept means research, engineering, distribution, over-all policy and its administration, production and jobs.

In evaluating the long-term opportunity behind this concept, General Motors believes that the results are "entirely a matter of how we manage our affairs." And "we" might be defined, it is explained, "as business leadership in general, together with government and its attitude toward business as evidenced by national economic policies that so importantly determine the scope of business opportunity."

Army and Industry Must Fight to Win

WHEN the oil industry, industry in general, or in fact any group in this nation, individually or collectively, think they face a problem in these days, it would be well for such a group to contemplate the message sent by General Dwight D. Eisenhower, recently. Addressed to the National Association of Manufacturers, War and Reconversion Congress of American Industry, which ment in New York, the message follows:

"I have been requested by six of your members to address a message to the manufacturers assembled at this meeting. My message to you is simple and direct. It is merely that American fighting men believe they have a right to expect from you prompt production of every single thing they need in accomplishing the defeat of our country's enemies. They have been led even more to expect this because of the marvels of American production.

"They clearly understand that you have your difficulties. You have problems of materials, problems of risk, and many more. But they have a right to ask are your problems as grave as those that rest upon a division that has been ordered to capture a heavily defended hill from the enemy? Are they as difficult to solve as those that rest upon the commander of a bombing force who must lead his formations steadily and unfalteringly through a hail of flak to deliver his bomb load accurately upon his target? Do you have any problem so soul-shaking in its implications as that of leading a battalion of young Americans through bullet-swept zones to the attainment of their objectives? Are the risks that you must run as great as those that are incurred by every rifleman that responds to his captain's orders for an attack?

"That soldier must go forward, he must win, and his chances of coming back safely to the United States vary in direct ratio to the completeness in which you men assembled here devote yourselves to your great task. Send him heavy ammunition, tires, trucks, guns, and planes, and the great sacrifices American fighting men are compelled to make, even in success, will be reduced and your responsibilities to them, to the country and to yourselves, will be fully met."

Alertness Advised On Oil Agreement

THE oil industry is encouraged by the statements of Senators Connally, McKeller, and White to the effect that the Anglo-American oil agreement will not be ratified. However, it would be extremely dangerous for oil men to relax in their fight against the treaty.

The statements of these senators do not guarantee that the treaty is completely dead, and it would be foolhardy to accept them as such. Apparently, the administration is not urging that the committee act, but pressure can be commenced at anytime—perhaps after January 1, when there will be 5 new members on the committee; or perhaps even later, when the war is nearer its end and there is a rush to enact numerous pacts and treaties.

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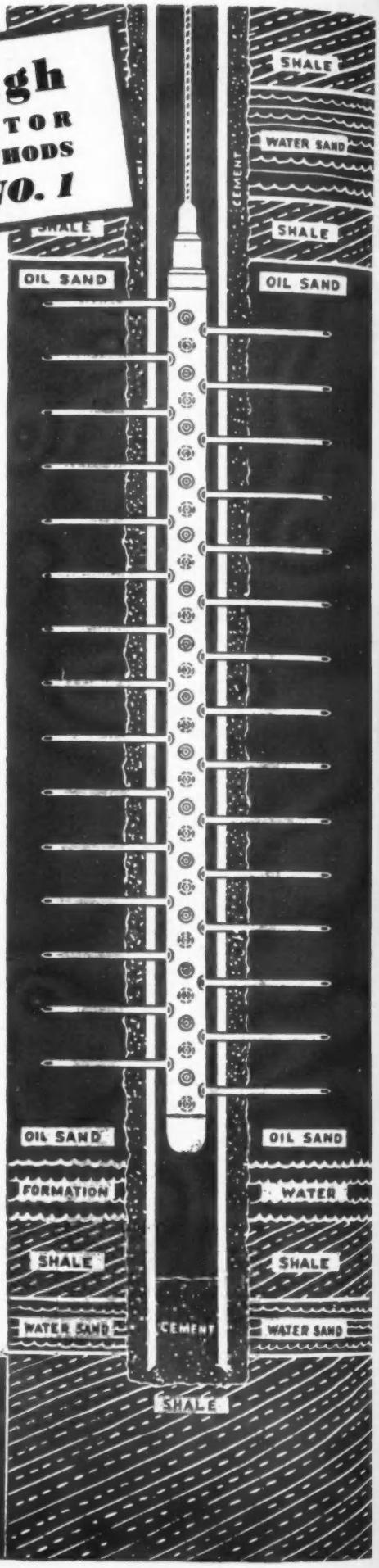

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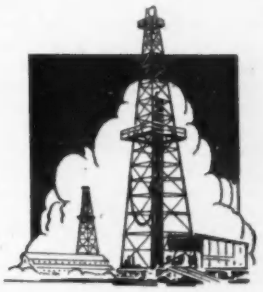


By BERTRAM F. LINZ, Washington Correspondent

STATE Department experts have completed their initial study of the industry's proposals for revision of the Anglo-American petroleum agreement and are awaiting only the turn of the year to call members of the PIWC national oil policy committee into consultation to iron out some points on which there are differences of opinion as to meaning or intent.

To Senate In Advance—On the basis of the understanding thus expected to be reached, the department will have a new version of the agreement drafted, which will be submitted to the Senate foreign relations committee, before being taken up with the London government, to insure that the new agreement will be certain or ratification.

January Certification—The new year will start off with crude production at a high level, PAW having certified a daily output of 5,040,800 barrels of all petroleum liquids for January. The January certifications, for the first time, class Alabama as a producing state, at 300 barrels daily, and recognize decreased demand for West Texas sour crude in a 9000 barrel cut for the state.

OPA Cost Query—OPA has set the stage for the investigation of producing and refining costs, demanded by the House small business committee to determine whether present maximum prices are adequate and will get the survey under way early in January.

Tires for Tank Trucks—In a new effort to solve the oil transportation problem, the ODT has initiated a survey to learn how many tires will be needed to put back on the road tank trucks now out of commission because of lack of rubber, and to keep all trucks operating 130 hours a week. ODT also has tightened up on its tank car regulations, ruling that permits for trips of less than 200 miles will be good for 15 days only and will not be renewed except upon recommendation by PAW.

Difficult Year Seen for Transportation in America

Three years of war strain threaten to make 1945 the most critical and difficult year in the entire history of American transportation, it was declared last week by Transportation Director J. M. Johnson.

Since our entry into the war, Johnson said, the freight load on the railroads has increased 47.7 percent in terms of ton-miles, and the stepping up of the war in the Pacific will throw new burdens upon the western railroads next year while those in the East are still struggling under record loads.

Johnson pointed out that because of the enormous wartime need for petroleum and its products, the inland waterways, the Great Lakes, rivers and canals this year carried a large share of the volume between pipe line and rail terminals and on all-water routes, while the pipe lines of the country are now carrying into critical shortage areas more crude and products than any other single medium of transportation. The entire pipe line system is working at or near capacity, he said, and there is no likelihood that the demand will be less in the coming year.

"While the transportation situation immediately following Pearl Harbor was already deemed critical, each succeeding year has brought with it an increasing load of men and materials to move," Johnson stated.

"The rate of increase slowed down somewhat during 1944, but the actual load is continuing to increase and the outlook for the coming year indicates a further increase. Our transportation facilities will be strained further to meet the mounting military and civilian demands in the most critical year ahead."

State Department Ready to Discuss Substitute Oil Pact With PIWC

Industry representatives and State Department experts are expected to get together shortly after the turn of the year to discuss various provisions of the PIWC's recommended oil treaty on which department officials are uncertain.

At the department it was indicated that Charles B. Rayner, petroleum consultant, is ready for such talks, following three weeks of study of the industry's recommendations which is said to have disclosed that there are only a few points on which there may be disagreement, most of which can be settled readily through the process of "clarification."

As soon as these disputed questions, or most of them, are resolved, it is expected that the original treaty will be recalled from the Senate foreign relations committee. A new version will be prepared, apparently incorporating the ideas, if not the wording of the industry's draft, which will be sent to the Senate committee informally, with a view to getting its reaction before taking the matter up with British officials who are expected to be invited to come to Washington for new talks.

There are three specific areas in which the department and the industry must get together, it was learned, and these will be the major subjects of discussion at the projected department-industry talks.

The first question is the treatment accorded Trinidad and Alaska by the PIWC committee in its definitions of "United Kingdom" and "United States." This is one of the most important points, since it is not believed that the British would consent to have Trinidad oil considered in international trade while Alaskan oil was classified as coastwise. The industry's definitions would bring Alaskan oil under that provision of Article VI, Section 1, holding that "no provision in this agreement shall be construed to apply to the operation of the domestic petroleum industry within either country." Trinidad oil, on the other hand, would be excluded from that provision, and department officials are confident that the British government will not accept a revision unless Trinidad and Alaska are placed in the same category.

Distinction Inadvertant?

It has been suggested that the distinction drawn by the committee between the two possessions was inadvertant.

A second point to be settled is that of the provision guaranteeing the American industry immunity from the anti-trust laws for actions taken in compliance with recommendations of the petroleum commission which is set up in the agreement.

Principally, it was indicated, department doubts on this point center around the question whether it is necessary to give the industry blanket immunity, although it is realized that in carrying out recommendations of the commission it will be necessary in many instances for oil companies to act as a unit.

In the belief that the provision, as

written, may be too broad, it has been suggested that a substitute be written under which, whenever the industry is called upon to act as a group, the matter will be submitted to the Department of Justice for approval, as is now being done by PAW in cases where joint action is required and by other war agencies under similar circumstances, the clearance given by the department being, in effect, an immunization so far as the specific action is concerned.

In some quarters it is believed such a provision would have far more chance of acceptance by the Department of Justice than a blanket immunity which might tie its hands entirely.

A final major question is seen in those provisions of Article VI, Section 2, providing that that nothing in the agreement shall "be construed to prevent a signatory government from taking such action as it may desire to limit the amount of petroleum which may be imported into its country."

Provision Superfluous?

In the view of department officials, this provision is either superfluous or is vested with some subtle implication not readily apparent. They point out that the right of a government to limit imports into its territory never has been questioned and could not be denied by the petroleum provision, and are anxious to explore the matter with a view to learning whether the industry had in mind some contingency which has not been foreseen in department circles.

At PAW, Administrator Ickes said he had had time only for a "hasty" look at the treaty proposals, but did not evince any great enthusiasm over them.

"Some of the suggestions seem to be suggestions just for the sake of making suggestions," he said, in referring to minor changes made by the PIWC committee. However, he admitted, "there may be some suggestions there that ought to be incorporated."

Exploration Rights for Puerto Rico are Granted

The Development Company of Puerto Rico has been granted exclusive right to explore that island's oil and natural gas resources. The company is a branch of the insular government created for the development of new industries.

Explorations will be made in 55 localities comprising two thirds of Puerto Rico, from Catano through Cidra to Guayama and Salinas. The concession is granted for a year, with the right of three consecutive renewals of six months each at the discretion of the commissioner of the interior.

Three field experts have been sent by the Interior Department in Washington, after an official request of the development company. The survey will cost the government about $10,000.

79-Mile Gas Line Planned In South Texas By Dow

Dow Chemical Company will construct 79 miles of 4-inch electric weld liquefied gas line from Humble Oil & Refining Company's cycling plant at Katy, Texas, to Dow's plant at Freeport.

Anderson Brothers, Houston contractors, will begin the job about January 29, with completion expected within 45 days.

OPA Seeks Means of Getting Cost Figures on Production, Refining

The OPA last week set machinery in motion for a full investigation of production and refining costs, as recommended by Representative Wright Patman of Texas in a report for the House small business committee (THE OIL WEEKLY, December 11).

As its first step, the OPA asked the Petroleum Industry War Council, the Independent Petroleum Association of America and the Stripper Well Association to suggest the make-up of a committee to confer with the agency as to the scope of the inquiry and the manner in which it should be conducted, and to submit nominations for the committee.

Price officials had in mind a committee of 12 to 15 persons, but the first response to the inquiry to the associations, received from the Stripper Well Association, suggested a committee of 21, with three alternates.

The committee would be representative equally to the major companies, through PIWC nominations; the larger independents, from the IPAA, and the small operators, through the Stripper Well Association.

First meeting of the committee will be held early next month, as soon, in fact, officials said, as members can be appointed from the association nominations and brought to Washington. The group will be kept as small as possible, in the interests of speedy handling of the problem.

3000 Returns Sought

When the committee meets, OPA officials will submit a proposed questionnaire for its consideration and suggestions as to improvement. The questionnaire has been made as simple as possible and with a minimum of questions, in view of the fact that it will go out at the very time operators are most burdened with paper work—income tax returns, annual balance sheets, and the like.

While the Patman committee suggested that the sample investigation which it proposed could include only a small number of operators representative of all types of producers and of all sections of the country, OPA believes it may be necessary to send out possibly 15,000 copies of its questionnaire in the hope of getting 3000 returned, that being the number sent out and approximately the proportion returned to the Tariff Commission, when it made its study of production costs.

The committee also maintained that the whole thing could be handled in 90 days, but officials believe it will require at least twice as long.

Price Committees Exist

OPA officials are somewhat resentful of the committee's criticism that an industry committee never was set up to participate in the price regulation activities and point out that five district committees were set up. Only one, the District 5 committee, was ever active and it succeeded in getting an increase in price for California. The District 2 committee sent in two or three resolutions calling for an increase in price, but never pressed the matter, and the other three committees never did anything.

Price officials were represented as confident that the investigation would show very few instances of producers operating in the red, now that the stripper-well subsidy has been established and premium payments for high-cost operators in low-cost fields are on the way. They estimate that more than 95 percent of the stripper well operators are now in the black, and the remainder will be taken care of as the information is furnished on which the OPA can act.

In addition, it is contended, operators in other areas who had been working under too low ceilings have been taken care of through the many adjustments of individual pool prices which have been made over a period of some months.

Several questions of major importance will have to be dealt with by OPA in reaching decisions as to price increases. One will be the weight to be given finding and developing and other intangible costs, for which a lump sum of 60 cents a barrel is being allowed in computing the costs of the high-cost operators. Officials pointed out that the exploration and development costs must be dealt with carefully if the Treasury is not to be given a handle for a new drive to eliminate the 27½ percent depletion allowance now enjoyed.

Absorption of Increase

Another question is the old one of how to prevent the major companies from making additional profits if prices of crude are increased. This has been an administration policy, imposed upon OPA in dealing with questions of oil. In many quarters it is considered highly unfair to raise the income of one portion of an industry while telling another it must absorb that increase and, in the case of oil, it is pointed out that such a course might defeat the whole purpose of an increase, since the OPA can name maximum prices but cannot enforce their payment. In other words, if the major companies refused to buy from small operators at the increased prices granted by OPA the increase would become ineffective.

In some OPA quarters, it is believed the best way out of the present impasse would be for the government to tell the industry that the war has resulted in increasing costs of production and the government will absorb the excess, as it has done in the case of overland transportation to the East Coast.

This suggestion is based on fears that the price structure might collapse when the defeat of Germany reduces military requirements for oil and possibly leaves the industry with large stocks on its hands. It was pointed out that if prices were raised and Germany capitulated, and if large stocks and reduced demand came, competition to move inventories might well break the price structure badly.

The committee which the OPA now is setting up is expected to have a considerable voice in the solution of these and other questions which are involved, and officials said it would be consulted on all points which may arise.

The major aim, initially, however, will

be to develop, with the assistance of the committee, a simple questionnaire by which may be obtained information needed for a determination of whether existing prices are adequate; then to work out a plan for getting the information from all types of operators and all sections of the country. Officials hope to have the questionnaires on their way to operators before the end of next month.

Praise of Davies' Work Good Christmas Present

Nicest Christmas card Deputy Administrator Davies received came in the form of a telegram reciting a resolution adopted unanimously by the San Joaquin Valley Oil Producers Association at their annual meeting.

In its wire, the association "expresses its deep appreciation for your distinguished services as deputy petroleum administrator and appreciates the skillful manner in which you have organized the PAW, bringing to that organization experienced and competent men from the industry.

"It appreciates the manner in which you supported the oil producers in their request for a reasonable price increase for their oil production. It recognizes the excellent manner in which you have coordinated the abilities of government and industry to work in unison. It recognizes also the material contribution of petroleum production, manufacturing and distribution to the support of our armies in their march to victory.

"We express our pride in your services and extend to you our appreciation for your unselfish and untiring devotion to your country in these critical days of war. With the coming of peace, we will welcome you back as a member of the petroleum industry. You have set for all of us a high example of patriotic service."

Mexico's 100-Octane Gas Refinery Well Under Way

Construction work on the Mexican government's new 100-octane aviation gasoline refinery at Atzcapotzelco, near Mexico City, is progressing rapidly, and orders for 60 percent of the equipment and the materials have already been placed, it was announced December 21 by Administrator Ickes.

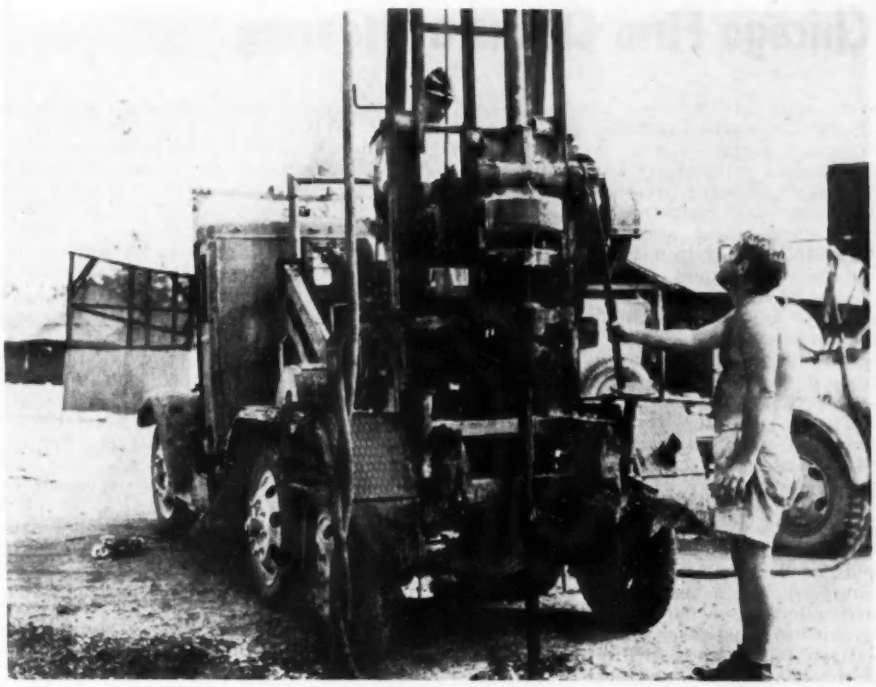
The cost of the project will exceed $15,000,000, and a loan of $10,000,000 has been made by the Export-Import Bank to finance purchase of materials and equipment in this country, Ickes said. No part of the credit, made available March 2, last, has yet been used.

The first unit of the plant is expected to be in operation by next October, with the entire project completed in December. It constitutes the Mexican government's first venture into the field of 100-octane production, under an agreement whereby the United States government will have the first rights to purchase part of the output of aviation gasoline and certain other products.

World's Deepest Well

The world's deepest well, Standard Oil Company of California's KCL 20-13 in the South Levee field of Kern County on December 21 had reached the record-shattering depth of 16,200 feet. Exactly a week before the depth was announced as 16,134 feet.

Japanese Drilling Rig



"A Jap well drilling rig, and oh, brother, what a rig! Drilling in coral with no mud, fish tail bits, bullet holes all through it, and I've cranked that truck motor so much, if it had a spring motor it would run for the duration and maybe even longer."

Thus writes Technical Sergeant John Perritt, former driller with the Heiland Exploration Company, Shreveport, Louisiana, from the Southwest Pacific. Sergeant Perritt acknowledged receipt of the pony edition of THE OIL WEEKLY, sent free to service men overseas, said "it's very interesting and I pass it on to the other fellows in my company so everyone can enjoy reading the oil news."

The rig pictured likely is for water wells but might be used for shallow oil drilling.

Natural Gas Demand Shows Increase, 1943 Over 1942

Demand for natural gas in 1943 rose 12 percent over the 1942 record to a total of 3,414,889 million cubic feet, it was reported last week by the Bureau of Mines. Of this total 3,403,479 million cubic feet was consumed domestically.

In 1943 consumption was largely for domestic use, 529,444 million cubic feet, or 16 percent of the total: commercial, 204,793 million cubic feet, or 6 percent; field use, 780,986 million cubic feet, or 23 percent; carbon black manufacture, 315,562 million cubic feet, or 9 percent; fuel at petroleum refineries, 243,584 million cubic feet, or 7 percent.

Exports to Mexico increased from 8572 million cubic feet in 1942 to 11,079 million cubic feet the following year, and shipments to Canada increased from 130 to 131 million cubic feet, the Bureau reported.

Oklahoma Company Must Market Competitor's Gas

In a precedent-setting order which gas operators believe will have far-reaching effects, the Oklahoma State Corporation Commission instructed Republic Gas Company to buy gas produced by Peerless Gas Company in the Hugoton gas pool and to market it through Republic facilities.

The order designates gas lines as "common carriers" along with oil lines. Commissioners pointed out that this was the first time in the history of Oklahoma regulations that a gas pipe line company was required to market a product from an opposition company's wells. The order sets the stage for similar rulings on similar cases now pending.

Republic Gas based its refusal to take the gas from Peerless wells on its policy of marketing only gas produced by its own wells.

Commission Chairman Reford Bond and Vice Chairman Ray O. Weems, who issued the order, Commissioner W. J. Armstrong, dissenting, said the decision was based on the "ratable taking law" of 1913, and was in keeping with the commission's policy relating to oil producers without pipe lines in which to market their products.

Humble Gives $500,000 For Hospital in Texas

A gift of $500,000 has been provided by Humble Oil & Refining Company for construction of a 100-bed hospital in the Tri-Cities area of South Texas. The hospital has been incorporated and will be built as centrally as possible to Houston, Baytown and Goose Creek, on a plot of from 5 to 10 acres.

The charter provided for a welfare institution to be operated without profit. Contributions to the hospital or earnings accruing to it shall be used for operating, maintaining and enlarging the hospital, and receipts in excess of expenses and reserves for these purposes shall be applied to the care of welfare patients.

Humble operates a large refinery at Baytown.

Cycling of Gas Would Cause Waste, Chicago Firm Claims at Hearing

Because of its importance in setting future gas control policies of the Texas Railroad Commission, a hearing in Austin last week on the Agua Dulce and Stratton fields, Nueces County, was attended by some 200 industry representatives. The commission contended that The Chicago Corporation had not followed commission orders providing that gas should be turned to the condensate sands of these fields after being processed for condensate liquids. The Chicago Corporation contended that cycling operations in this instance would create waste rather than be a conservative measure.

The commission recently entered an order requiring that all but 7.58 percent of the gas produced should be returned to the horizons from which it was produced. The Chicago Corporation contended that if this were done it would be impossible for them to supply the deands of Tennessee Gas & Transmission Company. As a result, the commission suspended this order and will allow it to remain in suspense until an order is written based upon testimony received at the hearing now going on. The hearing was recessed until January 17, at which time cross-examination of some witnesses, and the case for the opponents, will be presented.

Involved in this hearing were eight sands: the Comstock, the 4900-foot sand, the 5000-foot sand, the 5100-foot sand, the West Upper Austin, the West Middle Austin, the South Sponberg and the East Middle Austin. These sands contain no oil columns and the hearing was confined to the method of production in them.

A. S. Parks, consulting petroleum engineer, Houston, described the apparatus he had designed for sampling the gas. John Ashford, a member of the firm of Associated Engineers, Houston, explained how the actual tests were made. C. R. Williams, of The Chicago Corporation, told of test runs on the three plants operated in the area by The Chicago Corporation. He concluded the data gathered showed a total loss of 8.11 percent.

J. O. Lewis, consulting petroleum engineer and geologist, Houston, explained the effect of withdrawals from the field. He said that when the GPM dropped below three-tenths gallons, it was economically impossible to cycle the gas. He presented evidence to show that about 76 percent of the original wet gas can be recovered from the West Upper Austin sand, which he used as a typical formation of the two fields. He expressed the opinion it was necessary to cycle some of the gas twice, as 1155 feet of dry gas must be injected to recover 1000 feet of wet gas. Lewis said that since pressure must be lowered around the well bore that there must be some retrograde condensation in the reservoir whenever the bottom-hole pressure in the well falls below the dew point.

The last witness heard was Dr. Granger Brown, professor of the University of Michigan and a consulting engineer, who concluded that so far as these sands were concerned, a cycling operation would result in greater physical waste than straight production. He emphasized that these conclusions were based on these particular sands and upon tests made by other engineers who had testified previously.

Ingleside Injunction Is Dissolved by Circuit Court

The United States Fifth Circuit Court of Appeals in New Orleans Thursday dissolved Humble Oil & Refining Company's injunction restraining federal agencies from seizing control of its Ingleside Texas refinery to compel compliance with War Labor Board and union demands.

The temporary injunction had been granted by a northern Texas district federal court after threats are alleged to have been made by certain agencies, but the appelate court held that the district court in Texas did not have jurisdiction over the Washington parties named, and the cause was remanded to the district court "for further proceedings not inconsistent with the opinion." The circuit opinion stated that "jurisdiction of a district court is confined within strict limits, and its injunction power is further encompassed," and that "no sound basis existed for the issuance of the injunction . . ." It further stated that the Washington agencies and others are not residents of Texas and added that the company "had no real controversy with the Texas defendants at the time the injunction was issued."

FPC Checks Prices of TGT And Chicago Corporation

The Federal Power Commission has scheduled a hearing for January 29 in Washington on the application of the Tennessee Gas and Transmission Company for authority to construct 65 miles of pipe lines from its main Texas-to-West Virginia transmission lines to various gas and oil fields in Texas which now have either no market outlets for their gas or very limited outlets and in some of which the gas is being vented to the air in the course of production of oil.

The commission has instituted a comprehensive investigation also of the natural-gas rates of the company and The Chicago Corporation, the latter a purchaser and producer of natural gas in Nueces, Jim Wells and Kleberg Counties, Texas, which it sells to the former.

The investigation will determine whether The Chicago Company is a natural-gas company within the meaning of the natural gas act and, if so, will go into all rates and charges collected by both companies in connection with the transportation and sale of natural gas.

Culberson Is Chairman

Olin Culberson last Tuesday was elected chairman of the Texas Railroad Commission. The chairmanship, purely honorary, is customarily held by the senior member. Culberson's term is next to expire, so he is regarded as the senior member.

Canada Uses Oil from Ecuador in Emergency

Considerable savings of badly-needed California oil were effected this fall by arrangements made by PAW to divert much of the British Columbia demand from California to South America but the great need of the Navy for tanker space will necessitate a partial return to California oil through the first quarter of 1945.

Faced with an increasing demand for oil for the Pacific war, PAW last summer suggested to George Cottrelle, Canadian oil controller, that arrangements be made to switch as much as possible of the British Columbia demand to South America, promising to make the necessary arrangements for tankers.

Conversations were held with the governments of British Columbia, Great Britain, Canada, Ecuador, Colombia, Uruguay and Venezuela, as a result of which the entire exportable supply of Ecuadoran crude produced there by a British company was transferred to British Columbia from neighboring South American countries to which it formerly had been going and which made arrangements to get supplies from Venezuela, providing about 4000 barrels daily of the British Columbia demand of 20,000 barrels. In addition 11,000 barrels of heavy Colombia crude was provided and 2000 barrels of light oil.

This month, however, the tanker situation necessitated a change in the program and California resumed the supply of 6000 barrels of heavy crude and 2000 barrels of light oil and will continue to handle that business through the coming quarter after which the situation will be re-examined with a view to determining whether South American oil can be substituted.

Carter Subsidiary Buys Yale System Connection

Leader Oil Company, a wholly-owned subsidiary of The Carter Oil Company, has acquired Yale Pipe Lines, Inc., which recently completed an 80-mile combination 6-inch and 8-inch line connecting the Elk Basin pool in Wyoming and Montana with The Carter Oil Company's refinery at Billings, Montana, and Farmers Union Refinery at Laurel, Montana. The line also provides pipe line transportation originating in the Byron, Frannie, Wyoming, pools which is received into the Yale system from the Interstate Oil Pipe Line Company at Warren, Montana.

Texas Padre Island Claim Denied by Supreme Court

The State of Texas has lost its claim to Padre Island, a strip of land 100 miles long and about three miles wide, lying along the Gulf Coast. Midpoint of the island is about opposite the middle of the east line of Kennedy County.

In an extended opinion handed down by Supreme Court Judge C. S. Slatton last week, the court sustained the title held by successors to the old Spanish grant. It is believed that the island is likely to contain one or more oil fields and portions of it are now under lease to the Sun Oil Company and Sinclair Prairie Oil Company.

Alabama Included for First Time as PAW Recommends January Production

A production rate of 5,040,800 barrels daily of all petroleum liquids was recommended by PAW December 20 for January, 1945, an increase of 14,400 barrels daily over that recommended for December.

Production rates in barrels per calendar day during January, compared with the rate certified for December are as follows:

District 1—New York, 13,000, unchanged; Pennsylvania, 40,400 and 41,400; West Virginia, 15,000 and 15,200; total 68,400 and 69,600.

District 2—Illinois, 212,000 and 212,300; Indiana, 12,500 and 13,000; Kansas, 280,000, unchanged; Kentucky, 34,800 and 32,800; Michigan, 47,600 and 47,500; Nebraska, 1200, unchanged; Ohio 8350 and 8600; Oklahoma, 378,000 and 377,000; total 974,450 and 972,400.

District 3—Alabama, 300, no previous certification; Arkansas, 84,900 and 83,100; Louisiana, 391,000 and 385,300; Mississippi, 53,000, unchanged; New Mexico, 110,600 and 111,600; Texas 2,274,000 and 2,278,000; total 2,913,800 and 2,911,000.

District 4—Colorado, 9500, unchanged; Montana, 23,350 and 23,400; Wyoming, 103,500, unchanged; total 136,350 and 136,400.

District 5—California, 947,800 and 937,000.

Texas Allowable Slightly In Excess of PAW Figure

The Texas Railroad Commission's December proration order, set last week after a hearing, fixed an allowable of 2,279,149 barrels daily, which is 5149 barrels in excess of the amount recommended by PAW.

Only one change was made in the order and that was to reduce the allowable for the Talco field from 25,404 to 22,994 barrels.

Since January has 31 days, the commission again ordered 24 producing days for most fields including the East Texas field. Panhandle was again exempt from shutdown.

The commission reported a rise of 3.3 pounds in the average bottom hole pressure of the East Texas field during November. It appeared that the water-injection program had progressed to the point where withdrawals were offset at least at the current rate of production.

Frank Speller requested that the commission hold a hearing to consider liberalization of the salt-water transfer order applicable to the East Texas field. This likely would be held about January 10.

Gulf Oil Corporation requested that the potential and bottom-hole pressure tests for the McElroy field be ordered, it being claimed that the alleged manpower shortage which has delayed these tests for three years, did not exist. The commission indicated that it would act immediately, order the tests and scheduled hearing to be held in Midland on January 10, at which procedure is to be worked out. The purpose of these tests is to eliminate potentials, some of them 13 years old, upon which the allowable is now distributed.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Dec. 23	Dec. 16
Alabama	250	250
Arkansas	80,900	80,700
California	885,200	885,000
Colorado	8,850	8,900
Florida	50	50
Illinois	204,100	196,400
Indiana	11,550	13,750
Kansas	279,250	267,100
Kentucky	29,350	29,950
Louisiana	360,900	360,800
North Louisiana	71,250	71,150
South Louisiana	289,650	289,650
Michigan	52,650	52,900
Mississippi	52,100	52,100
Missouri	100	100
Montana	23,360	22,900
Nebraska	1,000	1,050
New Mexico	105,700	105,700
New York	12,050	13,200
Ohio	7,950	8,450
Oklahoma	359,400	358,200
Pennsylvania	32,100	34,400
Tennessee	35	35
Texas	2,111,550	2,111,550
Upper Gulf Coast	552,900	552,900
East Texas Field	371,000	371,000
Rest of Eastern Texas	141,450	141,450
Lower Gulf Coast	246,450	246,450
Southwest Texas	79,000	79,000
South Central Texas	20,100	20,100
West Texas	471,300	471,300
North Texas	140,600	140,600
Panhandle	88,750	88,750
West Virginia	7,500	7,750
Wyoming	95,950	96,950
Total United States	4,721,845	4,708,185

L. F. Kahle Is Key Official In New Pipe Line Firm

L. F. Kahle is the executive vice president of Interstate Oil Pipe Line Company, organization recently formed by the merger of lines owned by Standard Oil Company of Louisiana and Oklahoma Pipe Line Company, subsidiaries of Standard Oil Company (New Jersey).

W. R. Finney is president of the concern, which brings together more than 3500 miles of trunk and gathering lines.

L. F. Kahle

API Brochure Issued

"Petroleum Products," first in a series of revised brochures visually depicting the myriad uses of petroleum and the many operations and processes required to bring a barrel of petroleum from a well to the consumer, is now available from the American Petroleum Institute, 50 West 50th Street, New York 20, New York.

Prices are as follows: 1 to 99 copies, 10 cents each; 100 to 499, 8 cents; 500 to 1000, 6 cents; 2000, 4 cents.

API Schedules Jubilee In Chicago Next November

The silver jubilee meeting of the American Petroleum Institute will be held in the Stevens Hotel, Chicago, during November, 1945, on dates to be fixed later by the Institute's executive committee.

Originally scheduled for November 13-16, 1944, this twenty-fifth annual meeting was postponed at the request of the Office of Defense Transportation. At the time of the first postponement earlier this year it was hoped the meeting might be held some time in the spring of 1945, but an appraisal of the progress of the war dimmed any such hope, President W. R. Boyd, Jr., announced. The meeting was therefore scheduled for November, 1945, in the belief that by then victory will be so nearly complete as to warrant the use of transportation facilities by the industry for the purpose of reviewing its problems of war and planning for peace.

Eilerts Is Rewarded for Portable Laboratory Job

Kenneth Eilerts, physical chemist at the Bureau of Mines Experimental Station, Bartlesville, Oklahoma, was recently given an "award of excellence" by Secretary of the Interior, Harold L. Ickes, for ingenuity and diligence in perfection of a portable laboratory. Work on the laboratory has extended over two years. The device is a maze of technical machinery mounted on a huge truck and is designed to test the characteristics of the gas and liquid contents of natural, deep-seated petroleum deposits known as gas-condensate reservoirs in various fields in the Gulf Coast area. The laboratory has been in use for some time and has proved highly efficient.

Eilerts is a graduate of Oklahoma A. & M. College and has been with the Bureau of Mines since 1930.

California Junior AIME Elect Officers for Year

Officers for the Junior Division, Southern California Section of AIME for 1945, were elected at a recent meeting, in La Habra, California. They include, Milan G. Arthur, Union Oil Company, chairman; Dick Parsons, Standard Oil Company of California, secretary; John De Hetré, Youngstown Sheet and Tube Company, programs; Charles F. Gates, General Petroleum Corporation, membership; and John Sinclair, Associated Oil Company, ex-officio, 1944 chairman.

At the meeting a panel of experts discussed "Interpretation of Tests to Estimate the Productivity of Oil Wells."

New Mexico Plans for Geological Study Course

Georges Vorbe, professor of geology and petroleum engineering at the New Mexico School of Mines, Socorro, New Mexico, is revising the curricula in geological and petroleum engineering to include a summer field course. The new course will last six months and will be required of geological students. Location of the field camp will be in a region of geological interest which has not been fully mapped or worked over. The course will be given at the end of the war. Vorbe was formerly a consulting geologist, in Midland, Texas.

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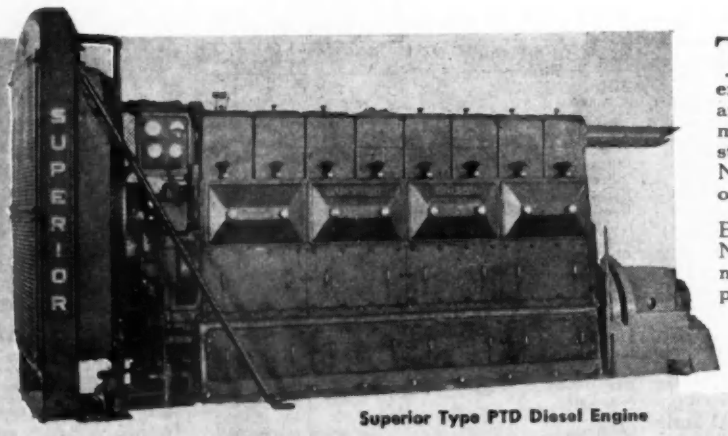

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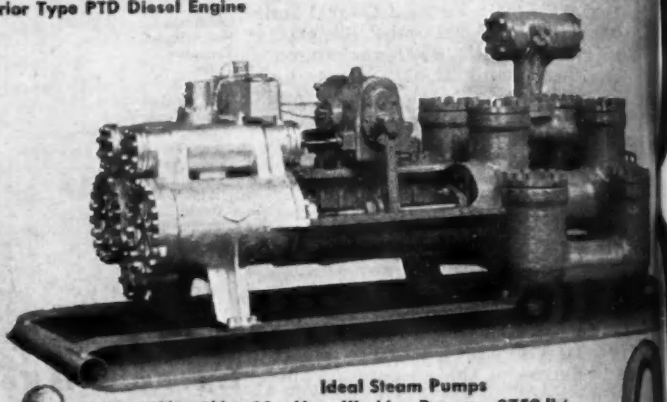

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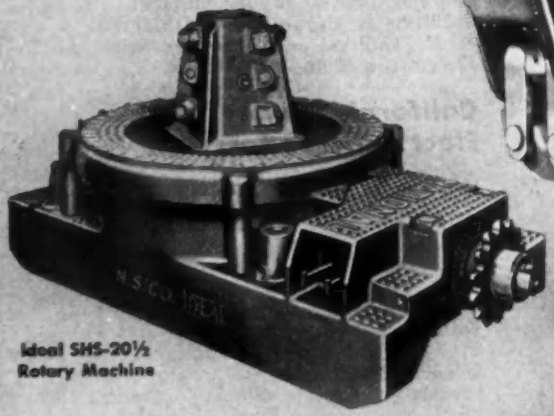

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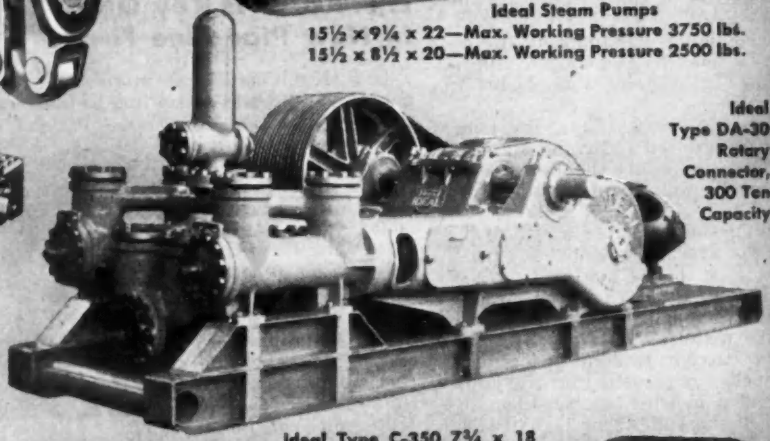

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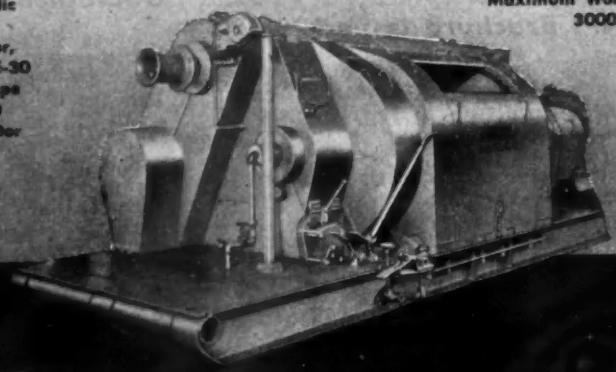

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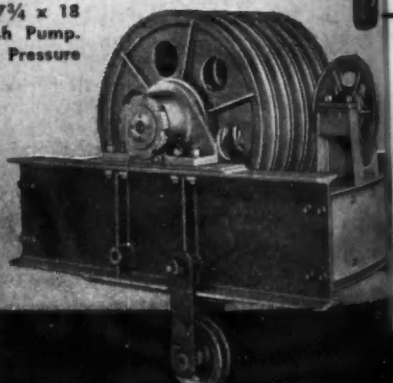

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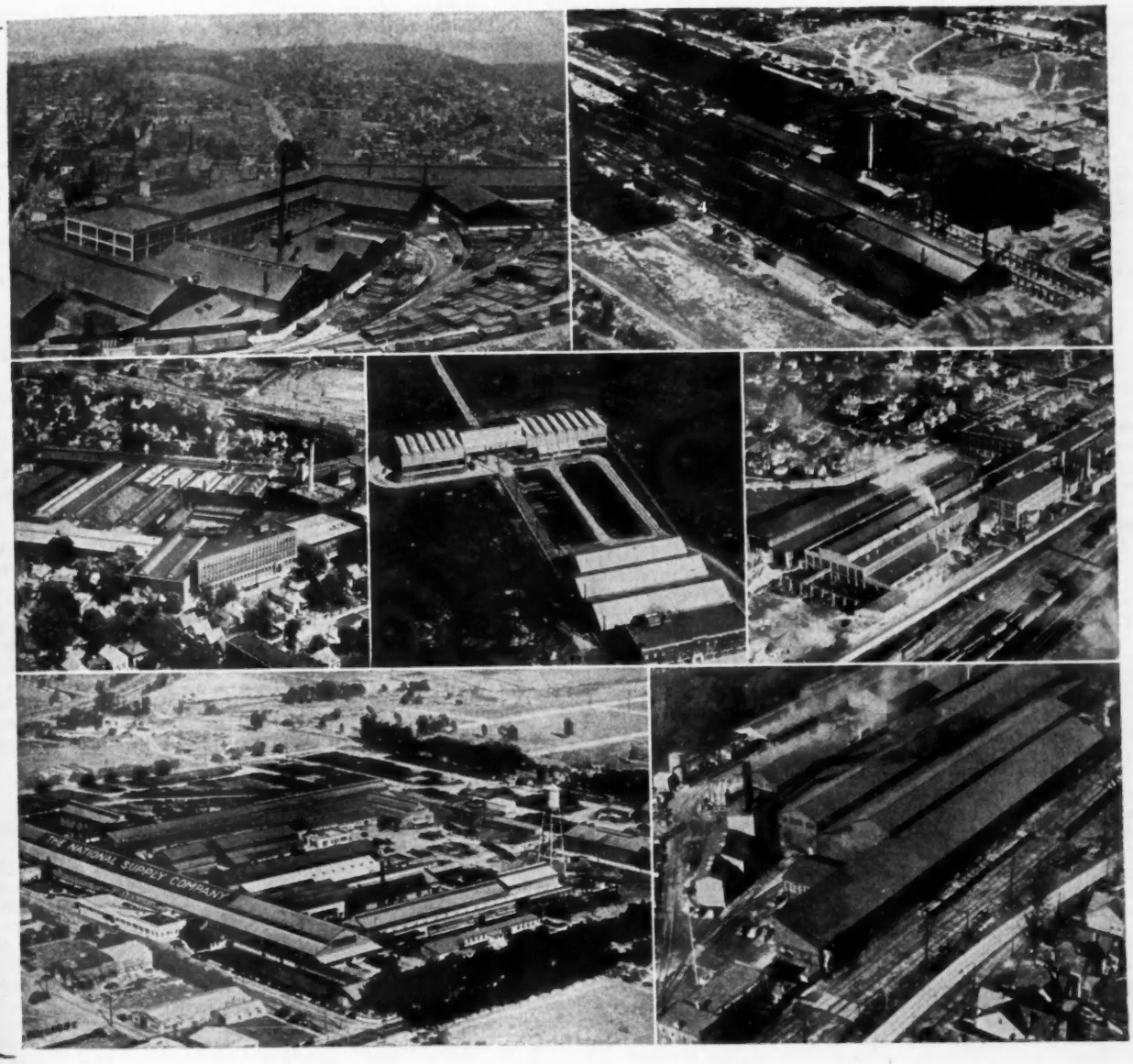

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Many Phases of Gas Conservation Discussed by Texans at Austin Meet

By GEORGE O. IVES, Staff Writer

The meeting called by the Texas Railroad Commission last week in Austin for an informal discussion of the gas conservation problem brought forth many words from Texas operators but few definite recommendations for changes in statutes.

The question of whether the state should allow export of its natural gas consumed the major portion of the 8-hour session. Other phases that came up for discussion were: ratable taking, protection of correlative rights, elimination of venting of casinghead gas, and compulsory unitization.

Members of the commission criticized the assembly for its failure to offer definite proposals during the early part of the session, Commissioner Olin Culberson asserting that he had hoped that discussion would be constructive. A legislator present said that his body would like for the commission to file a brief stating what is wanted and needed. Their only requirements, he said, are that recommendations be within the scope of the constitution, and that only the framework rather than the complex structure be outlined.

At the conclusion of the meeting, Chairman Beauford Jester said the commission would welcome written suggestions from the industry relating to gas conservation problems.

Difference of opinion was expressed as to whether the commission has under present statutes sufficient authority properly to regulate gas operations. Such differences of opinion seemed to indicate that the statutory authority, since it is in doubt, is not clearly defined. Because of the wide range of problems, which necessarily would make it difficult to promulgate any broad rules without creating hardship in special cases, it was suggested that whatever laws might be enacted should give the commission broad discretion to act in such instances.

Robert Lee Bobbitt, former Texas attorney general, suggested a committee representing the Railroad Commission, legislature, and industry, to discuss needed conservation statutes and amendments which would give the commission needed power.

Ratable Taking and Property Rights

Regarding property rights and protection of correlative rights within fields, there were two distinct schools of thought: one which considered this to mean they were entitled to take their own production to fill an established market demand without obligation to take gas from other leases or operators. Another group thought it should mean that every operator is entitled to equitable distribution of production and outlet with others in any field. It was brought out that if gas regulation could be administered in the same manner and with the same power as oil regulation, many of the present difficulties would not exist.

In this connection, Clint Small, representing Tennessee Gas and Transmission Company, said that they would take just as much gas from offset operators as they would from the properties of the Chicago Corporation, based on reserves.

The first pointed suggestions as to any needed changes in law came from a representative of a major company who urged provision for ratable taking. A representative of an independent operator with production in one of Texas' major gas fields said that his principals would like an arrangement whereby they could produce on a correlative rights basis with offset operators. The commission is impeded by interpretation of present laws from writing such orders, he said.

Elimination of Flared Gas Waste

Burning gas flares was declared to be the outstanding example of actual gas waste, and this was seen as constituting one of the principal arguments which ultimately might be used by the Federal Power Commission to obtain federal control of the industry's operations.

Some speakers urged the railroad commission to start now to capture this gas. Maston Nixon thought the commission, in establishing allowables, might consider what use is made of flared gas. Apparently he had in mind the granting of bonus oil allowable for gas saved.

Several operators pointed out that casinghead gas has performed a useful service in lifting crude oil, and in the true sense of the word could not be called waste. The expensive method required in gathering this gas and boosting pressures to a point which would allow introduction into pipe lines or returning it to reservoirs was pointed out.

W. J. Murray, former engineer for the commission, said the first thing to do in conserving gas is to eliminate flares. He had calculated, after a study two years ago, that in excess of a billion cubic feet of gas daily was being vented in Texas at that time. He understood that this figure has since been reduced but that the amount being flared today is still substantial and important. A committee to appraise the volume of gas being flared in each field, and to recommend ways in which this gas might be utilized was suggested. If the commission should find itself unable to reduce the waste after trying in fields venting the greatest amount, it should then inform the legislature that it cannot under existing statutes stop waste, and ask for assistance.

Compulsory unitization was injected into the discussion by the commission when Commissioner Ernest O. Thompson asked if it was thought legislation requiring unitization was necessary to a complete conservation program. A large-company representative said that it was. Commissioner Culberson urged caution because of possible violation of property rights. Some thought it would be a violation of constitutional property rights to force any man to enter a pooling agreement against his will, although others said that some states do have such requirements and they are not construed as violation of rights inasmuch as under such regulations a man is considered to own only that oil or gas in place under his tract and is entitled to recover it and no more.

The question of export of natural gas from Texas arose repeatedly. After numerous charges pro and con, it seemed to be the consensus of lawyers present that the United States Supreme Court had held that no state can prohibit export of gas in interstate commerce.

In the beginning, Commissioner Thompson reminded that public interest had been awakened to the importance of gas as a natural resource and that people in Texas want laws enacted to preserve it; that the average citizen sees a threat in a gas pipe line taking gas out of Texas.

Some indicated a fear of dissipation of Texas wealth through export of gas and wanted to see the state's gas reserves kept in Texas and preserved for posterity. Exporting gas would in time send Texans "back to the woodpile" for fuel, destroying any hopes of creating an industrial empire within the state, opponents declared.

On the other hand, it was declared that refusal to share gas with other states would constitute the initial step in erection of trade barriers which would ultimately wreck the union. It was asked if Texas had not developed its great petroleum industry by encouraging rather than restricting its use.

Marshall Newcomb, of Lone Star Gas Company, doubted that there is more than 20 years supply of crude oil in Texas at present production rates, whereas there appears to be "enough natural gas at 1943 production rates to last 75 or 100 years."

A Panhandle operator gave credit to the establishment of markets outside the state for development of the tremendous Panhandle gas reserve, with the result that the state got more taxes, landowners got more money, and that more people were employed in Texas. He said that before establishment of out-of-state markets a gas well in that area was worth absolutely nothing. His position is that owners of gas reserve have bought it, paid for it, and are entitled to sell it, but not to waste it.

Scientific Use of Gas

Dr. E. P. Schoch, of the University of Texas, urged conservation of Texas gas resources toward the day when science would be able to use it for the greatest good by extracting the most valuable of its components and burning nothing but worthless residue. He pointed out development in Texas of a process whereby two elements of methane are joined together to form a new compound. "We can now make acetylene at half the price it was formerly produced," he declared.

Dr. Schoch condemned Texas and Texans for being backward in research into methods of utilization of this resource, pointing out that while several companies maintain laboratories which are doubtless of value, the east and northeast sections of the United States maintain extensive research foundations and will be well ahead of Texas.

Another Panhandle operator indicated entirely too much importance was being attached to the exportation of gas from Texas. He though there would still be tremendous reserves of low-pressure gas after pipe lines were through and that this could be used in the state for all conceivable industrial and chemical enterprises.

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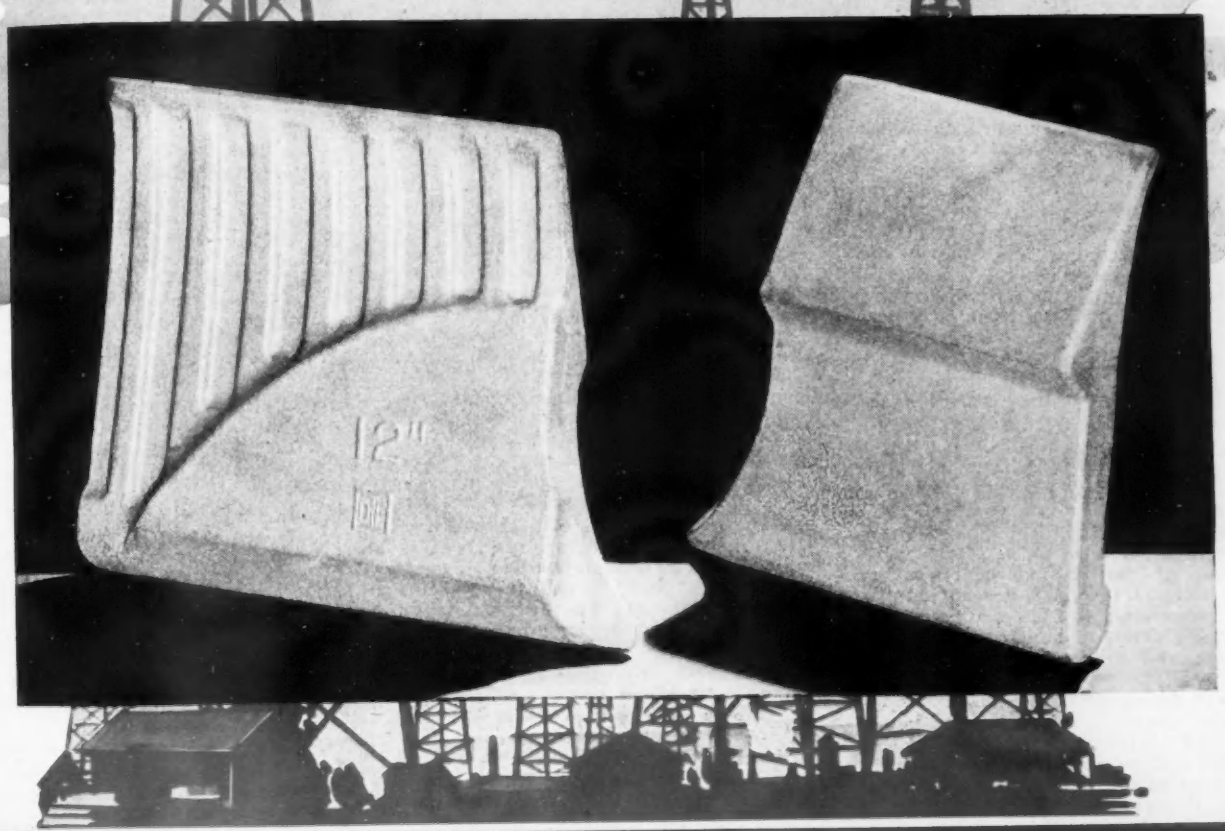

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Louisiana Refuses to Join Opposition To FPC; Schoeppel Again Compact Head

Governor Andrew F. Schoeppel of Kansas has been named chairman of the Interstate Oil Compact Commission for 1945, the third year that he has served in this capacity. J. C. Hunter of Texas has been named first vice chairman and Warwick M. Downing of Colorado second vice chairman.

In accepting the position for another year, Schoeppel said at Jackson, Mississippi, where the compact adjourned December 16, that there was some doubt that he would serve the entire period because he feels that he has not been able to devote sufficient time to the commission due to his gubernatorial duties.

The battle over the Federal Power Commission came out into the open at Jackson. Sam Jones, delegate from Louisiana, announced that if certain reports were adopted which opposed the encroachment of the Federal Power Commission, Louisiana was then and there giving its 60-day notice that it was withdrawing from the Compact. Jones pointed out that a legislative mandate to the Louisiana Conservation Commission requires it to oppose exportation of gas from Louisiana. Support of the FPC was essential to prevent such exportation and, therefore, the state objected to the compact officially opposing the federal board.

First report to which Jones took exception was that of the regulatory practices committee of the compact. This report, delivered by Theo Morgan of the Kansas Corporation Commission, urged the expansion of the gas industry and the development of this natural resource.

Gas Report

Last year's gas production was marketed as follows: Field consumption, 20.8 percent; domestic use, 14.6 percent; commercial use, 5.8 percent; carbon black manufacture, 8.7 percent; petroleum refineries, 7.4 percent; electric plants, 8.3 percent; cement industry, 1.4 percent; and other industrial uses, 33 percent.

It was shown that even with expanded use for chemical production from petroleum and natural gas, total production for 1944 will consume less than 1 percent by weight of our petroleum and natural gas for this year.

It can be reasonably expected, however, that the accelerated expansion of the natural gas market within the last three years, (36 percent in the past 4 years) and prospective future expansion should bring about a more satisfactory price for gas at the well head, the report showed.

The life of some of our major fields on the present market outlet, it was stated, will extend over a period of years so great that it may overlap into an era where gas ceases to hold its present rank as a super fuel. It is understood that, in connection with our war effort, a great amount of scientific effort has been directed toward the breaking up of the atom itself. Should success be achieved in this field of endeavor, and it is not entirely impossible of attainment, the utilization of gas, as well as other materials, for fuel, will be superseded entirely.

With a rapidly expanding market, better prospective prices, and greater availability of equipment and materials, most of the gas now not being utilized for economic reasons may be collected and saved. Gas-producing states look forward, under a more advantageous marketing and price condition, to the complete conservation of this natural resource.

Mid-Continent Report

Speaking for the Mid-Continent Oil and Gas Association, Wallace Hawkins, attorney for Magnolia Petroleum Company, declared its opposition to the FPC and urged continued regulation by the states. He said the association is opposed to the regulation of gas by federal bureaus in the same way that it is opposed to oil regulation and that the group planned to insist before the FPC that conservation of oil and gas remain a state matter. "Use" is now prescribed in many of the state statutes, he pointed out. Hawkins cited the Connally hot-oil law as proof that the federal statutes hold now that this matter is a question of state concern. He insisted that gas in interstate commerce should be free to compete anywhere with any other fuel.

Neither Morgan nor Hawkins suggested that the compact adopt the reports they filed, but Jones, careful to keep the record clear, wanted to know whether this was a proper subject for discussion, and whether the statements made by the two speakers represented, or might by implication represent the compact's official attitude. Hunter, acting chairman, assured Jones that neither the compact nor Louisiana was bound by these reports, that they had not been adopted by the commission.

Governor Schoeppel also emphasized that the compact had no force but was merely a body organized to discuss problems and that, therefore, no member need be bound by the attitude or convictions of another member.

The Louisiana delegation itself offered a confusing situation to the commission. Joseph L. McHugh was the representative so long as Jones was governor. He has continued to serve since the new governor, Davis, was elected. However, Jones stated that he spoke for the governor and that he had been sent especially to present the governor's view of this problem.

Louisiana Representative

Because they could not determine the accredited representative, members of the nominating committee named their candidates by states so that whenever a decision is reached in Louisiana, the delegate named may assume his position.

The commission did not name its next meeting place, but Alabama or Florida seemed likely. The new policy of the compact has been to hold meetings in or near oil-producing states which are not now members, in the hope that after they see the compact in operation, operators and officials in those states will be more inclined to join.

Of Alabama's total area comprising 53,000 square miles, 35 to 40 thousand may be considered possible oil territory, 25 thousand well worth examining for oil, and from 10 to 15 thousand quite promising, in the opinion of Stewart Lloyd, acting state geologist.

The Gilbertown field, Alabama's first commercial pool, was discovered in February, 1944. A well near Gilbertown, Choctaw County, in southwest Alabama, belonging to the H. L. Hunt Company, came in on February 15, with a moderate flow of low-gravity oil. Up to date, ten producers have been found in the same area, with drilling proceeding. The field is between six and seven miles long, running in a northwest-south direction, and about a half mile wide. Production is apparently from the top of the Selma Chalk which is reached at between 2500 and 2600 feet. The oil is heavy, with a gravity of 17 plus, and the wells are not large producers. Total production of the field has amounted to between 50,000 and 60,000 barrels.

Lloyd pointed out that Alabama has the distinction of passing a full-sized oil and gas law before any production was discovered. In 1940, the Alabama legislature passed a law modelled largely on the New Mexico statute. Its object is essentially conservation, and its regulatory provisions are intended to secure that end.

Florida Activities

Although prospecting for oil in Florida dates back to 1901, it was not until 1943 that any real encouragement towards production was realized. At that time, Humble Oil & Refining Company's Sunniland No. 1, in Collier County, in the south Peninsula, found oil at 11,620 feet. Between 1901 and 1943, over that period of 42 years, 91 tests were drilled in Florida. Of the 91, 89 were abandoned at depths of less than 6200 feet, and most of them at less than 3000 feet. The remaining two wells were carried down to 10,000 feet or more, and one, the Sunniland No. 1, found commercial production.

Commenting on the Sunniland discovery, German Gunter, speaking before the compact meeting, observed that "even if the production at Sunniland is not much of a contribution to the nation's petroleum supply, it is important in its implications. For one thing, it answers the important question of whether or not there are petroleum source beds in Florida. Apparently a number of major petroleum companies believe that the discovery has significance. As a consequence, there has been some fairly intensive prospecting during the last year and six wells are now drilling. Of these, five are in the south Peninsula, in the general region of the Sunniland well. One is below 10,000 feet, and with one exception, the others are planned to go to comparable depths. The sixth active well is in the Panhandle. In addition, three locations have been made and drilling on at least one of these will commence soon. These locations are also in the southern Peninsula. Then there have been two completions since the announcement of the discovery at Sunniland. One of these, in Leon County, just about where the Panhandle begins, was abandoned at 6520 feet. The other, drilled one mile west of Sunniland No. 1, reached a depth of 13,512 feet, without obtaining production. Recently the Humble Oil & Refining Company has moved the rig to a new location one mile to the north of the discovery well and is making preparations to test the same horizon again."

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Cretaceous Formations In Canada

Geological investigation receives new impetus from Alaska highway

By G. S. HUME
Geologist for the Oil Controller for Canada

THE Alaska highway through northeastern British Columbia has stimulated geological investigation in an area where the Lower Cretaceous has a totally different sequence from that present in Southern Alberta. These changes, but not their full extent, have long been known in the contrast between the Athabaska McMurray area where Lower Cretaceous rests directly on Upper Devonian limestones and the areas in southern Alberta where Mississippian and Jurassic are present. For many years the Athabaska area has been the subject of wide discussion because of the occurrence of bituminous sands in the McMurray formation at the base of the Lower Cretaceous. Not only has the origin of the very large amount of oil in the bituminous sands been widely discussed but various methods have been proposed and tried for the commercial exploitation of these deposits. However, only the possible origin of the oil in relation to the general sedimentary sequence will be considered here in the hope this may stimulate further search for oil, particularly in northwestern Alberta and northeastern British Columbia, where conditions in the Lower Cretaceous appear to be exceptionally favorable for the occurrence of commercial oil deposits.

Alberta contains 255,285 square miles and there are about 40,000 square miles in northeastern British Columbia east of the Rocky Mountains. From the international boundary at latitude 49 degrees, between Canada and United States, it is 750 miles to the northern border of Alberta at latitude 60 degrees. Also from the eastern edge of the Rocky Mountains in British Columbia at latitude 60 degrees it is 200 miles to the eastern edge of the province and 290 miles farther eastward across Alberta.

Southern Alberta is readily accessible by railroad or by road, but 100 miles north of Edmonton the country becomes much more densely forested and large parts of it have few or no settlements. A railroad connects Edmonton with McMurray on Athabaska River 300 miles to the northeast but there is no connecting road in the more northerly part. The Peace River country, however, is connected with Edmonton both by railroad and road. Air routes, now extensively used, connect

Area in green shows region discussed in accompanying article, and its relationship to following Canadian oil areas: 4—Ft. Norman field; 5—Turner Valley field; 6—Taber field; 7—Red Coulee field; 8—Skiff oil area; 9—Wainwright field; 10—Ribstone oil area; 11—Moose Mountain area; 12—Athabaska bituminous sands; 13—Sage Creek-Flathead area.

Edmondton with McMurray and more northerly points in the Northwest Territories and also with the Peace River country northwestward to Alaska.

The northeast corner of Alberta is occupied by Precambrian rocks, bordering which on their western margin in the northern part, Palaeozoic strata crop out. The regional dip is to the southwest, so there is a progressive sequence of younger formations to the west and southwest and the outcrop of the Lower Cretaceous beds is relatively narrow. Over all the southern Plains, therefore, there are no exposures of Lower Cretaceous strata and the sequence and thickness are known only from drill holes. In the Foothills Belt, 20 to 30 miles wide bordering the mountains on the east, the strata have been highly folded and faulted and over extensive areas Lower Cretaceous beds are exposed. Hence the surface studies that have been made of the Lower Cretaceous are along the edges of the Alberta basin. These are in the west in the foothills from southern Alberta northwest for approximately 900 miles to the Liard River at the northern boundary of British Columbia and in the northeast in the relatively narrow outcrop belt in the northeastern part of Alberta in and adjoining the exposures of bituminous sands on Athabaska River near McMurray and along the lower part of Peace River west and southwest of Vermilion Chutes where the edge of the Palaeozoic occurs (Figure 1). To a large extent, therefore, the character of the Lower Cretaceous under the Alberta basin is unknown except insofar as this has been revealed by drill holes. For this reason the Lower Cretaceous under much of the Plains is undifferentiated whereas from exposures both along the Foothills and in northeastern Alberta it has been subdivided into formations.

Lower Cretaceous Stratigraphy

Southern Alberta: The table of formations (Figure 2) indicates the great stratigraphic changes in the areas where the outcrops have been studied. In the Crowsnest area and for 325 miles northwest along the foothills to Athabaska River, the Blairmore and Kootenay or their equivalents, composed entirely of non-marine strata, constitute the whole of the Lower Cretaceous. In the Crowsnest area of southwestern Alberta the Kootenay contains commercial coal seams but these disappear northwest and a part of the Blairmore known as the Luscar becomes the coal-bearing formation in the Mountain Park area southwest of Edmonton. In Turner Valley wells a coal seam occurs in the Blairmore 650 feet below the top and to the northwest this coal-bearing part increases

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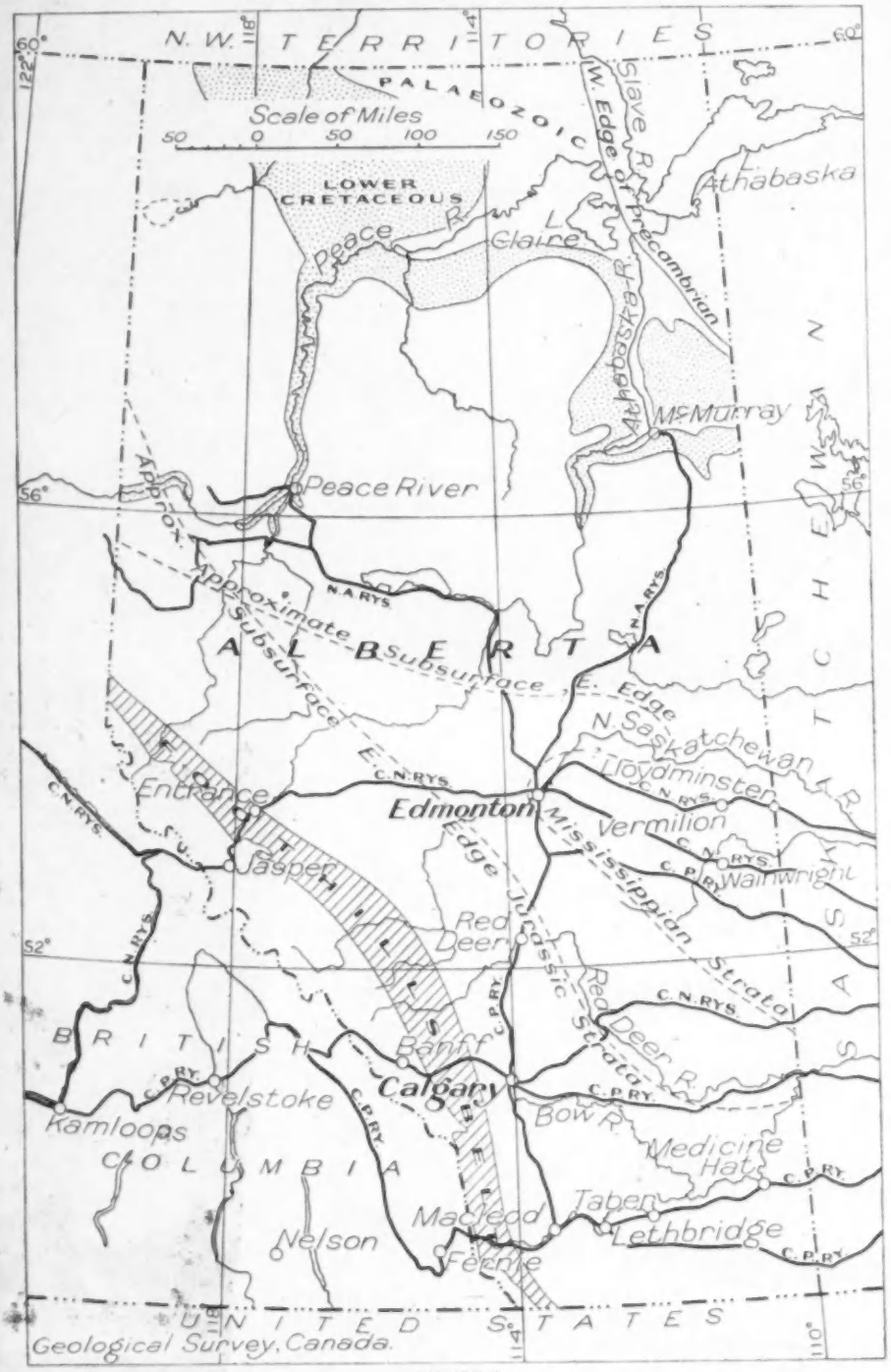

FIGURE 1
Geological features of Alberta.

both in thickness and in the amount of dark carbonaceous shales associated with it. Both the Blairmore and Kootenay in the southern foothills thicken and become more clastic to the west, presumably toward the source of the sediments in the then uplifted part of the Cordilleran area from which the sediments were derived. At the base of the Blairmore there is a very persistent conglomerate which in Turner Valley is a coarse finely conglomeratic sand stone known as the Dalhousie. This conglomerate differs from other conglomerates near the top of the Blairmore in that in the latter there are porphyry pebbles which are absent in the former. This then would seem to indicate that igneous rocks, apparently uncovered to the west in late Blairmore time, were being eroded and that clastic material from them was being deposited farther east.

The decrease in thickness of the Lower Cretaceous is very marked toward the east. In Turner Valley the Kootenay is thin and in some wells it is scarcely recognizable. Eastward, it probably disappears entirely. On the plains the basal part of the Blairmore commonly is a coarse sand, in places somewhat conglomeratic and this has been thought to be the equivalent of the Dalhousie sand of Turner Valley. Little is known of the correlation of the sands of the Lower Cretaceous under the Plains. The basal sand produces oil at Taber, where it is known as the Taber sandstone. A similar sand in the Red Coulee area is locally known as the Vanalta and in Montana the basal sand has been called the Sunburst. It is highly improbable that these represent a continuous sand body but they may be parts of the same sandy phase of sedimentation.

Oil has been produced from the basal Blairmore sand in Turner Valley and from its presumed equivalents on the Plains. Gas and oil have also been found in higher Lower Cretaceous beds in Turner Valley but these have been of small importance. It seems highly improbable since all these beds in southern Alberta are non-marine, that any oil could have originated in them. The beds, therefore, are presumed to have acted only as reservoir sands for oil that migrated into them from elsewhere. As with all oil, it is extremely difficult and usually impossible to fix the source with any degree of certainty, but the suggestion is made that this oil either originated in the underlying Jurassic shales or in the still lower Mississippian limestone. The writer is inclined to favor a source mostly in the Jurassic but the reasons for this are beyond the scope of this paper.

The non-marine Lower Cretaceous of the southern foothills and plains of Alberta, therefore, may be regarded as providing possible reservoir conditions for oil and if the source of the oil is in the underlying Jurassic shales, as here suggested, then the fact that most of the oil so far found in the Lower Cretaceous is in the basal sands has an added significance. Since the basal sands on the southern plains are widespread, then on the above assumptions, the problem of finding oil in them is closely related to the distribution of the Jurassic as well as to the necessary structural conditions. In this connection a well drilled at Castor, 120 miles northeast of Calgary on what is said to have been an excellent seismic structure, may be significant. No Jurassic beds were present and no oil or gas occurred in the basal Lower Cretaceous sands. In the foothills Jurassic beds extend from southern Alberta northwest into British Columbia north of Peace River. They thin rapidly eastward and are not known to occur in eastern central or northern Alberta. The prospects for oil in the basal sands of the Lower Cretaceous in southern Alberta, however, may be not wholly related to the distribution of the Jurassic since it is possible oil may have originated either in the underlying Mississippian or Devonian limestones. In fact, in southern Alberta the distribution of the Mississippian beds seems to be of great importance, but like the Jurassic these beds are restricted mainly to the southern and western parts of the Province and to northeastern British Columbia.

Northern and Central Alberta and Northeastern, B. C.: The stratigraphy of the Lower Cretaceous in central and northern Alberta and in northeastern British Columbia is very different from that in southern Alberta, as can be seen from the table of formations (Figure 2). In the more northerly areas there is an alternation of marine and non-marine beds brought about by an invasion of a northern sea. In the McMurray-Athabaska area and continuing westward into the foothills north of Athabaska River there is an interfingering of marine and non-marine for-

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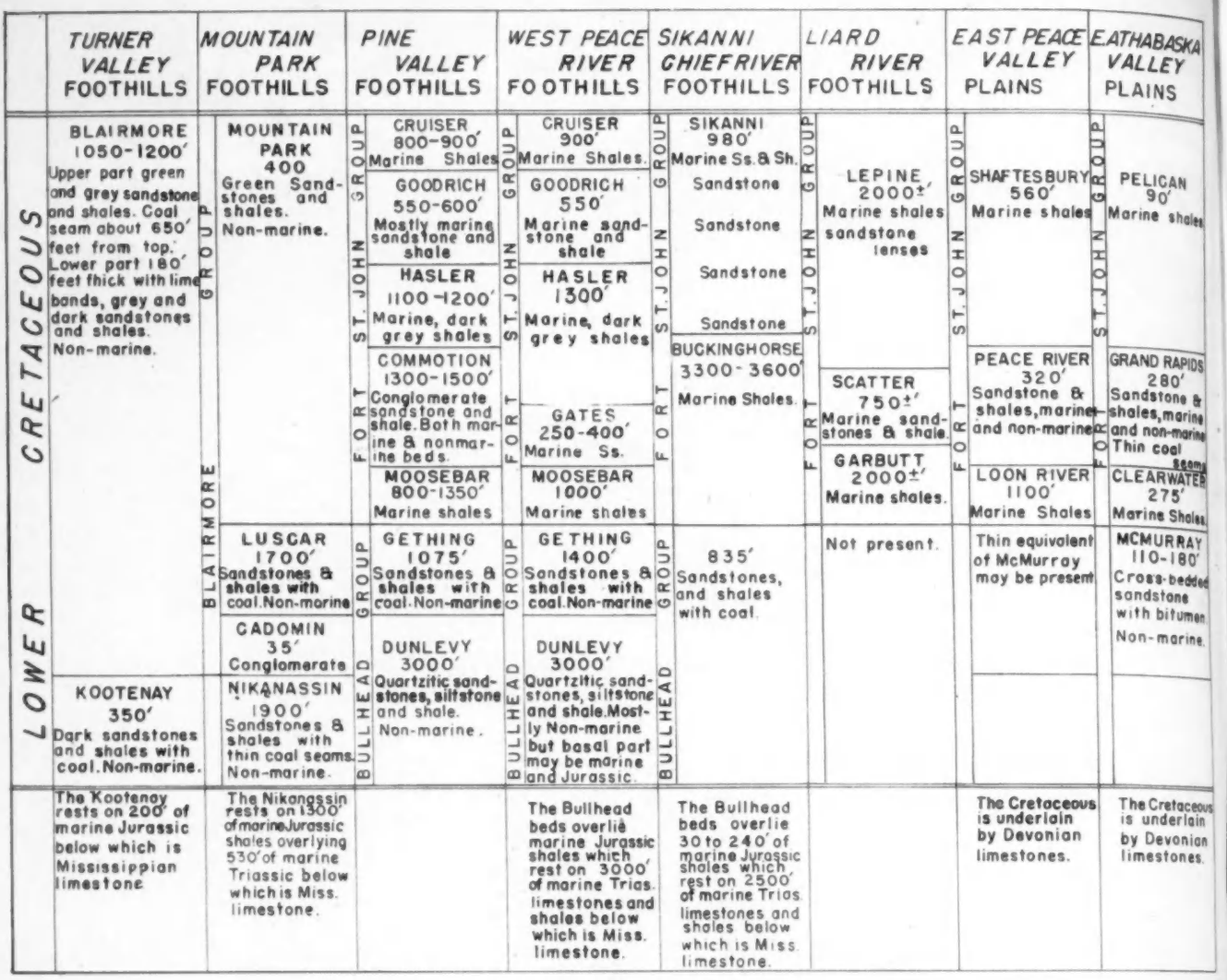
TURNER VALLEY FOOTHILLS
MOUNTAIN PARK FOOTHILLS
PINE VALLEY FOOTHILLS
WEST PEACE RIVER FOOTHILLS
SIKANNI CHIEF RIVER FOOTHILLS
LIARD RIVER FOOTHILLS
EAST PEACE VALLEY PLAINS
E. ATHABASKA VALLEY PLAINS
LOWER CRETACEOUS
BLAIRMORE GROUP
BLAIRMORE 1050-1200' Upper part green and grey sandstone and shales. Coal seam about 650' feet from top. Lower part 180' feet thick with lime bands, grey and dark sandstones and shales. Non-marine.
KOOTENAY 350' Dark sandstones and shales with coal. Non-marine.
MOUNTAIN PARK 400 Green Sandstones and shales. Non-marine.
LUSCAR 1700' Sandstones & shales with coal. Non-marine
CADOMIN 35' Conglomerate
NIKANASSIN 1900' Sandstones & shales with thin coal seams. Non-marine.
FORT ST. JOHN GROUP
CRUISER 800-900' Marine Shales
GOODRICH 550-600' Mostly marine sandstone and shale
HASLER 1100-1200' Marine, dark grey shales
COMMOTION 1300-1500' Conglomerate sandstone and shale. Both marine & nonmarine beds.
MOOSEBAR 800-1350' Marine shales
BULLHEAD GROUP
GETHING 1075' Sandstones & shales with coal. Non-marine
DUNLEVY 3000' Quartzitic sandstones, siltstone and shale. Non-marine.
CRUISER 900' Marine Shales.
GOODRICH 550' Marine sandstone and shale
HASLER 1300' Marine, dark grey shales
GATES 250-400' Marine Ss.
MOOSEBAR 1000' Marine shales
GETHING 1400' Sandstones & shales with coal. Non-marine
DUNLEVY 3000' Quartzitic sandstones, siltstone and shale. Mostly Non-marine but basal part may be marine and Jurassic.
SIKANNI 980' Marine Ss. & Sh. Sandstone Sandstone Sandstone Sandstone
BUCKINGHORSE 3300-3600' Marine Shales.
835' Sandstones, and shales with coal.
LEPINE 2000± Marine shales sandstone lenses
SCATTER 750± Marine sandstones & shale
GARBUTT 2000± Marine shales.
Not present.
SHAFTESBURY 560' Marine shales
PEACE RIVER 320' Sandstone & shales, marine and non-marine
LOON RIVER 1100' Marine Shales
Thin equivalent of McMurray may be present
PELICAN 90' Marine shales
GRAND RAPIDS 280' Sandstone & shales, marine and non-marine Thin coal seams
CLEARWATER 275' Marine Shales
MCMURRAY 110-180' Cross-bedded sandstone with bitumen Non-marine.
The Kootenay rests on 200' of marine Jurassic below which is Mississippian limestone
The Nikanassin rests on 1300' of marine Jurassic shales overlying 530' of marine Triassic below which is Miss. limestone.
The Bullhead beds overlie marine Jurassic shales which rest on 3000' of marine Trias. limestones and shales below which is Miss. limestone.
The Bullhead beds overlie 30 to 240' of marine Jurassic shales which rest on 2500' of marine Trias. limestones and shales below which is Miss. limestone.
The Cretaceous is underlain by Devonian limestones.
The Cretaceous is underlain by Devonian limestones.

FIGURE 2

Correlation of Lower Cretaceous in Alberta and Northeastern British Columbia.

mations. Such a sedimentary condition is regarded as providing not only adequate reservoir beds for oil but may provide possible source beds as well. It may be, therefore, that the oil in the Lower Cretaceous of the Wainwright-Vermilion-Lloydminster area and also that in the McMurray bituminous sands could have originated within the Lower Cretaceous beds themselves.

The change in the Lower Cretaceous in the foothills from non-marine beds in southern Alberta to marine beds in the Peace River area of British Columbia is believed to take place north of Entrance on the Canadian National railroad west of Edmonton. In the Peace River area the lower part included in the Bullhead Group is more than 4000 feet thick and for the most part is thought to be non-marine. It contains thick coal seams in the higher beds. To the north this group of beds rapidly thins and as far as known it is not present at all in the Liard River area where the Lower Cretaceous is thought to be represented only by the marine Fort St. John Group, which is 4750 feet thick. Sandstone beds occur with the marine shales but so far very little is known regarding the oil prospects although numerous structures of a favorable character are present.

Oil Fields of East Central Alberta: It already has been pointed out that the Lower Cretaceous of southern Alberta is entirely non-marine whereas to the north and northwest there is an interfingering of marine and non-marine beds. The seas present in the more northerly and northwesterly areas must therefore have had their shorelines in the areas where the interfingering now occurs. This is the condition in east central Alberta, where foraminifera are present in shales between non-marine beds carrying coal and much carbonaceous materials.

In this area it is common practice to draw the division between the Upper and Lower Cretaceous at a change in lithology between dark marine shales above and non-marine sandstones and shales below. This, however, is a matter of convenience rather than a strict interpretation, because in certain areas the shales immediately above the non-marine beds contain foraminifera similar to those found in the St. John shales of the Peace River area. These shales are thus assumed to be Lower Cretaceous and west of Wainwright at Viking they occur below the Viking sand and are 130 to 140 feet thick. The Viking sand which is thus at the base of the Upper Cretaceous has a thickness up to 20 feet and contains the greatest gas reserve known in Alberta, amounting to several hundred million thousand cubic feet. In certain areas the porosity seems to be more important than structure as far as gas production is concerned. Regionally, however, the Viking sand thins eastward and disappears west of the Wainwright area where there is no means of lithological identification between the Upper and Lower Cretaceous marine shales above the non-marine beds generally alone designated as Lower Cretaceous. Thus even in the Wainwright, Vermilion, and Lloydminster areas where oil fields have been developed, there are marine Lower Cretaceous beds not only lying above the non-marine sediments but associated and interfingered with them. The sandstones within this sequence, therefore, in part represent the shorelines of the former Lower Cretaceous seas in which farthr north marine sediments were deposited. They thus not only serve as reservoir rocks for oil and gas but they were laid down under conditions which favored the accumulation of organic source materials for oil in lagoons and bays adjoining the shoreline deposits and from which the oil and gas could have originated.

In the oil fields of east central Alberta the proportion of marine to non-marine Lower Cretaceous beds is not known. Apparently, however, as in the more northwesterly areas, the upper part tends to change northerly to marine

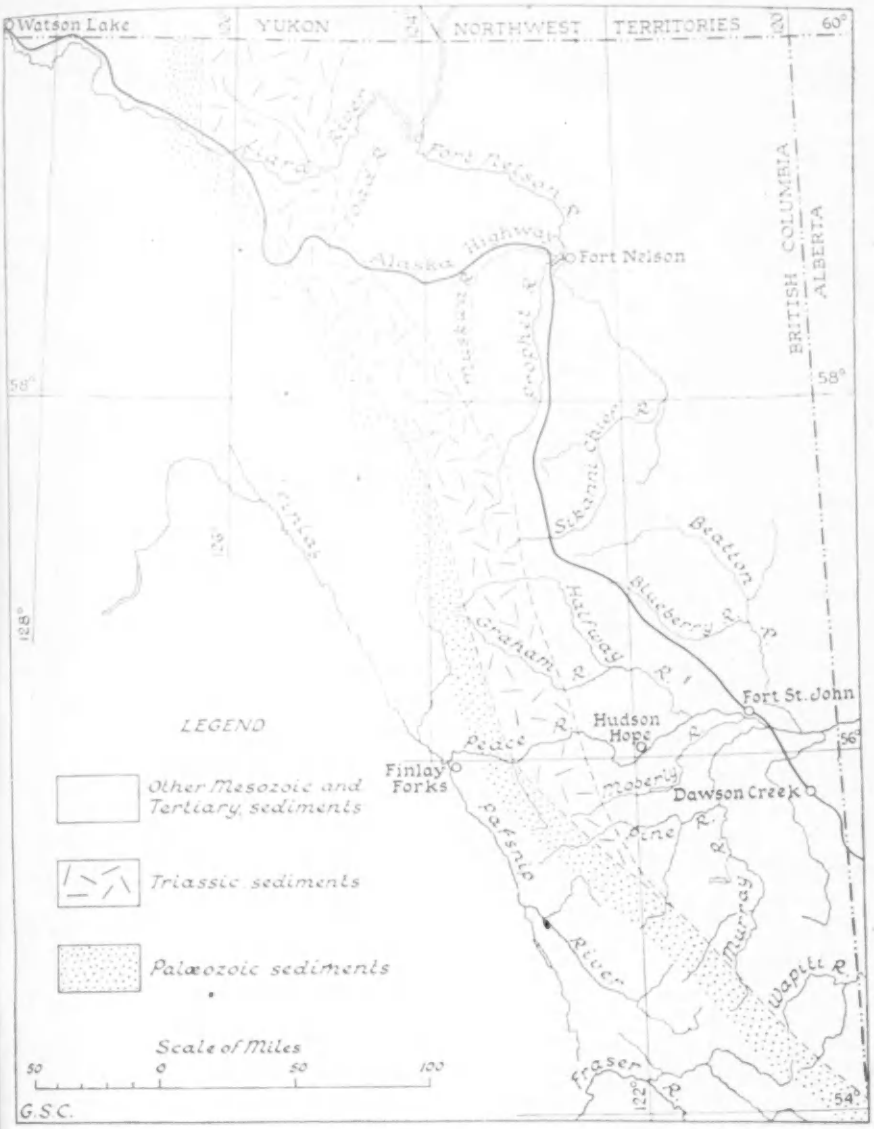

FIGURE 3
Northeastern British Columbia.

more rapidly than the lower part. This is well illustrated by the section in the foothills of the Peace River area where there are more than 2000 feet of marine beds in the Lower Cretaceous overlying at least 4000 feet of non-marine sediments, whereas farther southeast the whole sequence is non-marine. It is perhaps significant, therefore, that in the Wainright, Vermilion and Lloydminster areas the oil so far developed is in the upper 165 feet of beds below the strictly marine shales and in this upper part largely non-marine, the marine phase is better developed than in the lower part. This also would suggest that this oil originated in the Lower Cretaceous beds themselves rather than migrated into them from lower beds through other Lower Cretaceous beds in places several hundreds of feet thick and containing sands that in the oil fields carry salt water.

The structures so far found to contain oil in the Wainwright, Vermilion and Lloydminster areas have a very low structural relief. The sands containing oil have been relatively thin, from five feet to 20 feet, and the oil has been mostly heavy with a gravity from 14 to 23 degrees. In one area about 20 miles north of Vermilion a recently drilled well encountered two oil stained sands, each about 40 feet thick, one in the upper part of the Lower Cretaceous at about the Vermilion sand horizon and the other near the base of the Lower Cretaceous. In this well also there appeared to be much more marine shale than farther south although the shale has not been checked for foraminifera content. No definite conclusion regarding this area is warranted at the present time since the well has not proven to be commercial but the character of the sediments not only suggests thicker sands to the north but the greater prevalence of marine beds, as would be anticipated.

In east central Alberta, therefore, it appears that the prospects for oil in the Lower cretaceous are directly related to the character of its sediments. It is believed that the oil now found in these strata not only originated in them but that they also provide adequate reservoir beds. This, however, does not warrant the conclusion that the underlying Devonian limestones in which shows of oil have occurred in various wells may not also have prospective merit.

McMurray-Athabaska Area: The McMurray bituminous sands at the base of the Lower Cretaceous in northeastern Alberta have been known for many years. The deposits are so impressive that not only have they given rise to widespread comment by casual observers but they have been the subject of considerable study by geologists and petroleum engineers interested in their commercial exploitation. Much has been published on the size of the deposits and their oil content and many and varied have been the attempts to find cheap methods for the extraction and utilization of the oil. The deposits crop out for 118 miles along Athabaska River, disappearing down the regional dip below younger sediments 42 miles above McMurray. The maximum thickness is 180 to perhaps more than 200 feet and along Athabaska River and tributaries the bituminous beds form steep banks and cliffs up to and more than 100 feet high. The content of the bitumen in the sands varies from a small amount to 20 percent but there is a wide variation even in local areas both laterally and vertically in the deposits. As has been shown by drilling recently done by the Department of Mines and Resources, Ottawa, the impregnated sands in many places are interlayed with barren clay bands and in some places at least it is known that the richness of the deposits decreases away from the outcrop, showing there has been a tendency for the bitumen to flow even under present conditions in its highly viscous state. These facts have not only led to false estimates of the amount of material sufficiently and uniformly rich to be worth commercial exploitation, but may also have led to a considerable overestimate of the oil content in the deposit as a whole. The amount, however, is so large that any revision of estimates is of little consequence since the volume is admittedly billions of barrels.

Migration Discounted

It has already been pointed out that the oil in the Wainwright-Vermilion-Llyodminster area is associated with Lower Cretaceous sediments in which it appears possible the oil may have originated. The relation of the oil production to the sedimentary conditions is, however, only circumstantial evidence of origin but if such an origin is accepted, it logically follows that the oil in the McMurray sands probably came from source beds of the same type and age. The McMurray sands, in part at least, are deltaic with cross bedding on a large scale indicating forest beds. The bitumen, as is well known, is now slightly heavier than water and very viscous. If it originally was in this state it is obvious that it has not migrated any great distance but could have originated on the edges of the delta where the marine beds interfinger with the deltaic sands. The fact that the sand grains are surrounded by a water film inside the oil film which holds the sands into a coherent mass is of great significance, not only as indicating that the oil migrated into the wet sands but is of practical importance in mining the sands by steam shovel in open cut. When the sands are blasted with only sufficient powder to jar the deposit they tend to fall apart. Ordinarily the bituminous sands are black when broken out after a sufficient shock the film of oil around the wet grains is broken and the color of the sand grains imparts a grey color to the whole mass with

the tendency for the whole mass to disintegrate. The oil then obviously filled the interspaces of the wet sands by migrating into them.

It already has been noted that in many cases the outcrop material is richer than that away from the exposed face, thus showing a tendency for the bitumen to move to the place of escape and that on a warm day the black face of an exposed section will absorb sufficient heat to cause the richer parts to exude bitumen in small rivulets that flow down the steep slopes. Since there seems to be no recognizable difference between the composition of the bitumen at the outcrop and at some distance from it, the conclusion is drawn that the bitumen is much the same throughout at least local areas. This appears to indicate that the heavy gravity is not wholly due to oxidation at the outcrop although oxidation does affect the oil and causes the exposed sands to become hard and to resist disintegration by shock. The lack of change in composition away from the outcrop, therefore, appears to indicate the oil is of the same type throughout and if after migration into the sands it has been altered, the alteration has been largely uniform through the deposit. It is also known that the oil from the McMurray sands cracks at comparatively low temperatures and pressures. This seems further proof that the oil is young as has been pointed out by Ball and the changes that have occurred since its formation may be relatively small.

Thus the association of the oil with Lower Cretaceous beds and the physical conditions of the oil itself are strongly suggestive of an origin within the Lower Cretaceous sediments at no great distance from the present occurrence. This then points to the Lower Cretaceous as being the source for tremendous volumes of oil and it is to be expected that accumulations are likely to occur in favorable structures, especially in those areas where at least part of the sedimentary sequence is marine as in northwestern Alberta and northeastern British Columbia.

Another Possible Source

Another suggested source for the oil in the Lower Cretaceous McMurray sands is from the underlying Devonian limestones. This was made by McConnell in a report for the Geological Survey in 1893 and has subsequently been accepted by others. The content of the bitumen in the lower part of the McMurray sands is higher as a whole than in the upper part. This in itself should not be accepted as evidence of migration from below. As has been indicated the bitumen is slightly heavier than water and hence has a tendency to settle into the synclinal areas on the undulating surface of the underlying Devonian limestones rather than migrate upwards on the top of a water column. That there is still some movement, particularly toward the outcrop, already has been indicated so that the richer content of bitumen in the lower part of the deposit does not seem to have any relationship to possible origin from older rocks below. Also in drilling for salt at McMurray, wells have been completed to the Precambrian and cores of these are on exhibit at the University of Alberta. There is nothing in the cores suggestive of a Devonian source of oil for the McMurray deposits but it is realized that it is extremely unlikely residues of source materials in limestones would be recognized even though they had originally been present. The limestones might, however, be expected to contain some evidences of oil and these are not present with the exception of certain areas where it is obvious the oil has infiltrated downward into the limestones from the McMurray sands above. The fact that the limestones in the immediate vicinity of McMurray are not petroliferous, however, does not wholly exclude the Devonian as a possible source. Oil could migrate up dip to the McMurray sands along the erosional conformity, Mississippian, Triassic and Cretaceous from the Upper Devonian beds. To the southwest along this unconformity, Mississippian, Triassic and Jurassic beds occur, particularly along the west side of the Alberta basin (Figure 3) and these beds are known to be petroliferous. This, however, assumes a long distance migration which hardly seems in accord with the physical characters of the bitumen now found in the McMurray deposits. Generally, too, there is not any increase in richness of the McMurray deposit to the southwest down the dip from whence the oil would have been expected to come but to the northeast up Clearwater River, as pointed out by Sproule, the deposits do become leaner in bitumen and finally entirely free from it. Again, therefore, the evidence is not wholly conclusive. Since, however, the amount of marine beds in the Lower Cretaceous also increases to the southwest toward the mountains, any increase in richness of bitumen content in this direction in the McMurray sands could as readily be ascribed to more prolific source materials on the southwest edge of these deposits within the Lower Cretaceous beds themselves.

Conditions Favorable

Regardless of other source beds, therefore, which may be present in various parts of western Canada it seems that the Lower Cretaceous offers favorable sedimentary conditions both for the origin and retention of oil in a large area in the northwestern part of Alberta and in northeastern British Columbia. In southern Alberta, however, although there are favorable reservoir beds for the accumulation of oil, the evidence seems to indicate the Lower Cretaceous beds themselves hardly can be regarded as the source. Most of the area in which possible source beds occur in the Lower Cretaceous is largely untested and large parts of it are as yet not mapped geologically. The prospects in it, based on the evidence of oil, particularly the tremendous volumes that were generated to form the McMurray bituminous deposits, are exceptionally favorable and this remains true whether the oil in the McMurray sands is of Lower Cretaceous or older origin.

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Alaskan Exploration Oil Funds Are Again Denied

For the second time within a year, the House appropriations committee has refused to grant Secretary of the Interior Ickes $1,075,000 for investigation of the petroleum resources of Alaska.

Reporting the final appropriation bill of the session, the committee granted the Navy authority to use up to $400,000 of previously appropriated funds for the acquisition of privately owned lands in petroleum reserve No. 1, and granted the anti-trust division of the Department of Justice $150,000 of a requested fund of $175,000 for revival of duration-dormant anti-trust cases, involving the oil industry suit, and for passing on the monopolistic aspects of acquisitions by private interests of government-owned war plants costing in excess of $1,000,000.

The request for money for the Alaskan oil survey was presented at committee hearings by Director William E. Wrather of the Geological Survey. After pointing out that the item was presented in the regular bill for 1945, and a full hearing was held on it, Chairman Cannon of Missouri obtained from Wrather an admission that there was not new information to be submitted, then permitted him to give a brief explanation of the project before going on to the next item.

The committee also failed to act affirmatively upon a request of the Bureau of Mines for authority to use $50,000 of its appropriation for synthetic fuels development to pay temporarily employed engineers, architects and consultants without regard to civil-service and classification laws.

The committee was more sympathetic to the Navy's request for funds with which to acquire privately owned areas in the Elk Hills Reserve. Captain W. G. Greenman of the Office of Naval Petroleum Reserves explained that three properties are involved, and, he said, "until these leasehold interests have been acquired by the United States, oil operations in the Elk Hills cannot be wholly unitized under the Navy's control and the entire field either shut-in or operated as the Congress may direct."

Alaskan Coal Suitable For Gasoline Extraction

Indications that a large proportion, at least, of the Alaskan coals will prove suitable for the production of gasoline and other liquid fuels in the five-year investigation now being initiated by the Bureau of Mines were seen last week in a report of the bureau on tests conducted on coals from four districts in the Territory, all of which have been found suitable.

Carbonization assays already completed on samples of 14 Alaskan coals, it was stated, prove that the coke or char into which they can be converted could be employed in one synthetic process to manufacture gasoline, Diesel fuel, lubricating and fuel oils and paraffin wax, and the tar and oil that the coals can produce could be harnessed by another method to make gasoline, Diesel fuel and fuel oil.

There was, however, a wide variation in the return of tar and light oil per ton of coal, ranging from 9.7 to 40.9 gallons, the bureau said.

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Water-Injection Wells And Their Behavior

Factors which control the injection of water, their relationship and how well behavior can be predicted

By S. T. YUSTER* and J. C. CALHOUN, JR.*
Division of Petroleum and Natural Gas, School of Mineral Industries
Pennsylvania State College

PART 2

TO TEST the application of these methods to the field (see Part 1, THE OIL WEEKLY, December 18, 1944) the water input data on a core well were studied. The data from the area were fairly complete and conditions were well controlled making it as ideal for analysis as is possible in the field.

Two factors, which make it quite difficult to apply the equations and graphs are the effective radius of the shot well and the effective permeability of the strata. The application of a technique which was fiirst described at the Sixth Technical Meeting at State College in a paper on shooting, can be used to obtain these factors. Briefly, the theory and method are as follows: By substituting equation (5) for R in equation (3a), and changing to oil field units

$$(24)\quad \log_{10} V = .00617 \frac{khP}{\eta} \cdot \frac{1}{Q} + \log_{10} .178\,\pi\, Fh\,(1-S_r-w)\,r_w^2$$

It can be seen that plotting $\log_{10}V$ versus 1/Q should give a straight line in the radial encroachment region in which the slope of the line is the coefficient of 1/Q and the y intercept is the last term. By equating the slope of the line to .00617 khP/η, it is possible to solve for k, the average effective permeability, since all the other factors are known. Similarly the y intercept may be set equal to the last term in equation (24) and r_w can be obtained. It will be necessary to assume a value for the residual oil saturation S_r. The general field experience in the area will determine this. From the average effective permeability and the average air permeability a relative permeability is calculated. This factor should be used to obtain the effective permeability in all the strata.

The plot of log V versus 1/Q for the well under study is given in Figure 7. The linear trend is fair and is probably as good as can be expected for a heterogeneous permeability profile. The method is only valid for a uniform permeability sand and may not hold too well for several permeabilities in parallel. The average conditions in the area were:

Sand face pressure, 1835 pounds per square inch; average air permeability, 2.2 millidarcies; average porosity, 14 per cent; average oil saturation, 30 per cent; average water saturation, 36 per cent; producing sand thickness, 31.1 feet; residual oil saturation (assumed), 25 percent; spacing W-W, 300 feet.

Following the method outlined, the relative permeability was found to be 0.382 and the effective radius of the well was 18.6 feet.

The producing sand was divided up into the fllowing brackets:

Permeability Range	Feet of Sand	Average Permeability
.01— 1.0 md.....	10.7	0.5 md.
1.0 — 2.5.....	11.8	1.62
2.5 — 7.5.....	8.9	4.01
7.5 —15.0.....	1.7	9.85

Agreement Shown

An analysis was made similar to the one already described and the results are shown by the solid lines in Figure 8. The flood-out time of two of the permeability brackets is shown. The actual field data are given by the points. There is a fair agreement. It might be reasoned that this should be expected since the relative permeability and well radius were derived from the field data. Only a small part of the data are really needed for these. If several such analyses are made in the area, an average realtive permeability can be obtained. With an established well shooting procedure r_w will also be determined. It should then be possible to predict normal well behavior.

It will be noticed that the theoretical water input rate curve even predicts the bump shown by the actual data at around 100 to 150 days. The slight increase in water input rates in this region can be explained on theoretical grounds. At the time a given stratum is beginning to produce its burden of oil, it is probably fairly close to 100 per cent liquid saturated. Oil, a more viscous fluid, is being displaced by water, a less viscous fluid. In general (it is also dependent on the effective permeability involved) this should result in an increase in overall conductivity.

Beginning shortly after 200, days theory and field results diverge quite widely. One possible explanation for this is that some plugging has occurred. This may take place at either the input or producing well. When this well was chosen for study, it was not known that this area was subject to the formation of gypsum deposits in the producing wells. This is borne out in this analysis.

Several years ago an analysis of the gypsum content of core samples from the area was made and it so happens that the well in question had a high concentration of gypsum (0.462 pounds per cubic foot of sand) in its high permeability stratum. The mechanism for the gypsum deposition was discussed in a paper on the gypsum problem at the Fourth Technical meeting, and all the requirements for the mechanism appear to be present in this well. These are a heterogeneity of permeability with a high gypsum content in the sand, at least in the higher permeability strata. Precipitation then takes place by a common ion effect in which a saturated solution of gypsum in almost fresh water from the higher permeability section contacts brine containing a high calcium ion concentration coming from the lower permeability sections.

From this study it would appear that the method discussed can predict with a fair degree of accuracy the behavior of normally behaving water input wells. It should find further application in trouble shooting abnormally behaving wells.

Comparison of Patterns

An examination of Figures 1, 2, 3 and 4 (Part 1, THE OIL WEEKLY, December 18, 1944), shows that the flood-out time for the various patterns is not the same. Table 1 (ibid.) gives the relative flood-out times. For the same total well concentration the 7-spot is the fastest. The flood-out rates arrange themselves in about the same order as the number of input wells involved. It is interesting to note that although the 7-spot and 4-spot have the same steady input rate the flood-out time for the former is about one half that of the latter. This is due to the fact that the 7-spot has twice the number of input wells (half the number of producers) than the 4-spot. These inputs have their major effect before steady state flow sets in.

There are economic factors other than rate which must be considered before deciding on a development pattern. The relative cost of completing and operating input and producing wells must be given consideration. Columns 6 and 8 in Table I give the number of input and producing wells required. The flooding efficiencies must also be taken into consideration in making a decision. The five, four, and seven spots, and the staggered line drive used here have respectively the following flooding efficiencies: 72.3 per cent, 74 per cent, 74 per cent, and 80 per cent.

One other interesting and important fact is brought out by Table I. Although the flood-out time for the seven spot is the shortest, its steady rate is relatively low. This is of great importance, since this would tend to give more favorable water-oil rates. Once a given permeability section has produced its burden of oil and is conducting only water, this water rates is at minimum, while the rate at which the oil is being swept toward the producing well from the lower permeability sections is at a maximum. This natural tendency of the seven spot to reduce the by-passing through more open strata is a decided advantage. It is as if the more open sections were being held back to allow the tighter sections to catch up. The phenomenon is due to the "choking ef-

* This paper was presented at the eighth technical conference on petroleum production held at the school of mineral industries, Pennsylvania State College, State College, Pennsylvania, on October 27, 28, 1944.

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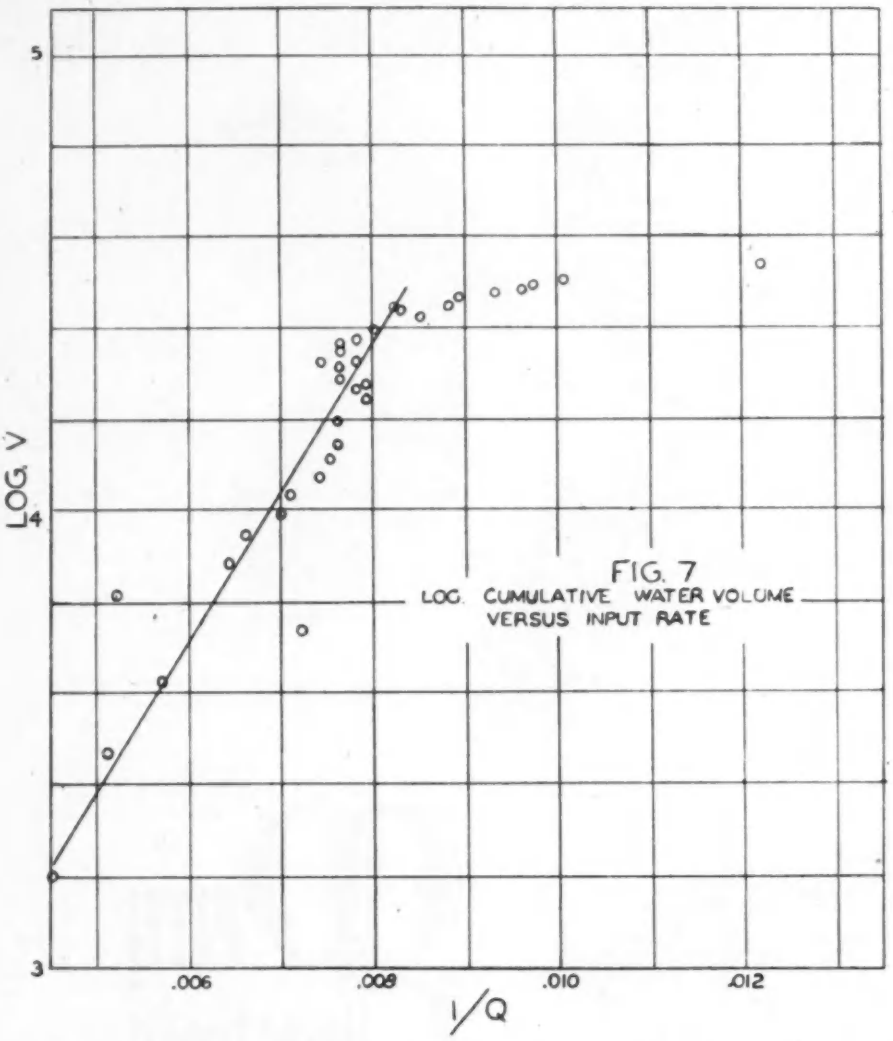

FIG. 7
LOG CUMULATIVE WATER VOLUME VERSUS INPUT RATE

fect" of the interference region on the input rate. It will be noted that the "choking rate" is greatest in the seven spot (see Figure 3).

Predicting Water Requirements

The water rate and cumulative volume curves may be used to predict the water requirements of a development. If no selective plugging is to be used on sand sections which are already watered out, the steadied rate of input indicated by the graphs will be the minimum requirements. If the development program is to be progressive and the water load is to be gradually increased as drilling proceeds, the minimum requirements indicated above will be sufficient. However, if all the input wells are to be turned on at one time a greater plant capacity will be needed or some of the sand will be flooded at a low pressure gradient which is undesirable. Under such circumstances it would be advisable to have the maximum capacity of the plant be from 50 to 100 percent above the steadied rate depending on the sand heterogeneity. The latter figure is the safest.

The procedure which should be used for determining the plant capacity is to plot the rate and cumulative volume histories as has already been indicated noting where the various sections water out. If the development is to be progressive, the steadied input rate per well times the total number of input wells which are to be handled will give the plant requirements. If all the input wells are to be turned in at once, note where the higher permeability sections water out. If the oil they are to produce represents an appreciable fraction of the total, choose a water rate somewhat before the time they break in. For example in Figure 6, (see also Table 2) the 20-millidarcy section will produce about one sixth of the total oil on the property. It waters out at a time when the rate is about 70 barrels per day. Under these circumstances a rate of about 80 barrels per day per well is advisable.

It can be seen that such a situation would result in excessive water requirements and a progressive development would be most economic. If selective plugging is to be used on the watered out sections in a progressive development, the water requirements may be cut from one half to one quarter of the steadied rate. Referring to Figure 6 (and Table 2) again, the 5 and 1-millidarcy sections represent about 15 percent of the total sand capacity. If the 10 and 20-millidarcy sections could be plugged off after they had produced their burden of oil, the older wells in the development would be taking water chiefly in the lower permeability sections and the water plant would handle the newer wells even though it had a lower capacity. If this technique were used in this case, the water capacity required per well would be around 10 barrels per day.

If the steadied rate of input is to be the sole criterion for plant capacity, it is not necessary to plot a curve. Equations (12), (13), (14), and (17) may be used. Multiplying by the number of input wells will give the capacity required. For the best analysis of the problem, it is felt that the use of the graphs is advisable.

Power Requirements

Up to the present, the discussion has been on the volumetric water requirements. It is also necessary to know the power needed to handle the water and, of course, this is dependent upon both volume and pressure. The product of the volume rate per day and the injection pressure as measured on the surface when converted to the proper units will give the horsepower requirements. The equation is:

$$(25) \qquad H.P. = 0.000017\ pq$$

Where p is the applied surface pressure (not the sand face pressure used in previous calculations) and q is the total input rate of all wells involved in barrels per day. Since the total input rate is the input rate per well times the number of wells

$$(26) \qquad q = nQ$$

where n is the number of input wells.

Using equation (12) for the five-spot as an example

$$(27) \qquad q = \frac{0.00154\ nkhP}{\eta(\log_{10}\frac{W}{r_w} - 0.420)}$$

If it is assumed that the maximum flooding pressure was used in the area and this was one pound per foot of depth, then the surface pressure p would be equal to 0.57P since hydrostatic head is 0.43 pounds per square inch foot of depth. Then

$$(28) \qquad q = \frac{0.00271\ nkhP}{\eta(\log_{10}\frac{W}{r_w} - 0.420)}$$

Substituting this in equation (25) gives for the five-spot

$$(29) \qquad H.P. = \frac{4.6 \times 10^{-8}\ nkhP^2}{\eta(\log_{10}\frac{W}{r_w} - 0.420)}$$

If the pressure is not as assumed above, a combination of equations (27) and (25) should be used.

In the calculations made previously in this paper, the flooding pressure at the sand face was assumed to be 1000 pounds per square inch. If the depth of the sand is 1000 feet, the surface pressure is 570 pounds per square inch. Figure 1 indicates that the steadied input rate in barrels per day per unit sand capacity per well (unit permeability and unit sand thickness) is 1.75 barrels per day. Since this is for 1000 pounds per square inch sand face pressure, the rate per pound of pressure would be .00175 and the intake rate per unit capacity per well would be 0.00175 P for the spacing and the effective well radius assumed. The intake rate per well for these conditions would be

$$(30) \qquad Q_s = 0.00175\ khP$$

and for n wells

$$(31) \qquad q_s = 0.00175\ nkhP$$

Substituting this in equation (25) gives

$$(32) \qquad H.P._s = 2 \times 10^{-6}\ nkhPp$$
$$= 2 \times 10^{-6}\ nkhp(p + 0.43h)$$

which gives the horsepower requirements for a five-spot water flood development with 300-foot spacing and the wells shot to give a 15-foot effective radius. It also assumes that the wide

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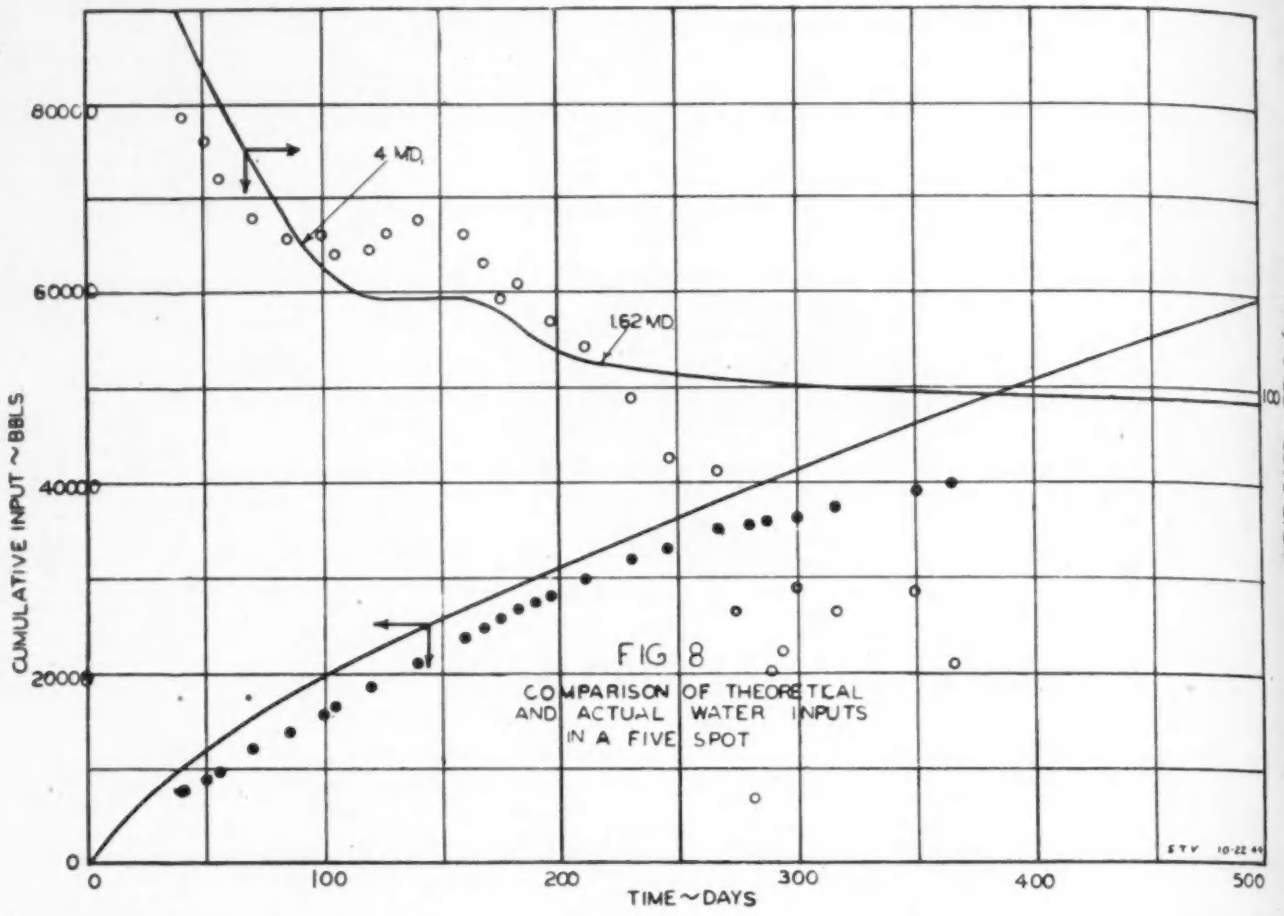

open (unplugged) steady state flow on all the wells will be the maximum for the property. A progressive development is also implied. The horsepower given is the theoretical and an efficiency factor should be included in the final calculation.

The column headed "Relative Steady Rate" in Table 1 gives the relative steady rates. It can be seen from this that using the steady rate as the criterion, the power requirements on the staggered line drive will be the least with the five-spot development the highest. However, if factors already considered are included, the seven-spot development shows a further advantage in that power requirements are relatively low.

Errors in Method

It should be pointed out again that certain assumptions have been made in the development of this method which are not the exact situation but which were necessary for this analysis. The most important one is that the pressure drop across the bank of oil which builds up in front of the encroaching water may be neglected. For cases in which a high oil recovery will result from the water flood this error will be appreciable. The rate of penetration of the flood would be slower and the interference region would be longer and more gradual. The steady flow rate should be the same.

In drawing up the water input histories of the various patterns, the behavior in the interference region was filled in by an interpolation method. Again this was an assumption which is not strictly true. It is felt that in general the input rate should decrease more and more rapidly as the steady rate is approached instead of having a uniform drop as was assumed. For patterns having a large interference region such as in the staggered line drive, the area of interference is larger than the radial encroachment area and the time involved is a good portion of the total flooding time. Obviously the probable error involved may be large.

However, despite these simplifying assumptions it is believed that these studies will have some application in understanding and predicting water flooding behavior. As long as the conditions are kept in mind and the applications are limited to conditions comparable to those made in this study, the methods should be useful. If a corrective shooting technique has been used on the wells, the varying effective radii of the different strata must be considered and a different set of curves made up for each effective radius.

The possible application of these methods to the prediction of the production history of a water flood development is quite obvious. However, this will be discussed in a future paper.

Summary and Conclusions

1. A method has been developed for predicting the behavior of a water input well by combining the equations for radial encroachment with that of the steadied rate for various patterns.

2. The graphs obtained have general application and can be corrected for such variables as permeability, pressure, sand thickness, and porosity to give the cumulative volume and rate of input as a function of time.

3. Using this method the standard water flooding patterns were compared on a constant well density basis and the seven-spot was found to have the following advantages:

   a. The largest number of inputs and the fewest number of producers per unit area.

   b. Lowest flood-out time.

   c. Fairly low steadied input rates which when coupled with the behavior listed under heading "b" means low water-oil ratios.

4. Water requirements on a lease may be predicted using this method of analysis.

5. The power necessary for water injection can also be predicted.

ACKNOWLEDGEMENTS

The writers wish to acknowledge the suggestions and criticisms of Parke A. Dickey, of the Quaker State Oil Company of Bradford, Pennsylvania, and the members of the petroleum production research staff of The Pennsylvania State College.

Brown Reelected

Standard Oil Company (Indiana) announces reelection of Bruce K. Brown as a director. He was first elected to the Standard of Indiana board in 1940. In December, 1941, he was called to Washington as a special consultant to the organization that later became the Petroleum Administration for War. When it became apparent later that his full time services were needed by the government, he resigned from the company board, in June, 1942, and was shortly thereafter appointed assistant deputy administrator of PAW from which post he recently resigned to become general manager of Standard of Indiana's research and development activity.

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Box 1498 Oklahoma City, Oklahoma

Exploration Continues Too Low in November

THE OIL WEEKLY'S monthly record of exploratory drilling, and appraisal of new fields, new pay zones, and field extensions

Data compiled by District Editors and coordinated
By L. J. LOGAN, Associate Editor

ALTHOUGH the government goal in exploratory drilling for 1944 is 5000 well completions, it now is indicated that the total will reach only about 4300, a shortage of 14 percent. This estimate is based on actual results in the first 11 months and projection of the November trend to the end of the year.

Furthermore, if the current rate of completing exploratory tests is not increased, there will be a failure to reach the new annual goal for 1945 by about 19 percent. November, 1944, wildcatting was, on the basis of only 4050 completions a year, or less than the indicated actual of the whole year 1944. Yet the Petroleum Administration for War has called upon the industry again for 5000 exploratory tests in 1945, the same number as the goal for 1944.

The wartime government agency for oil evidently has turned less optimistic than formerly as to the ratio of exploratory tests that can be expected out of a given number of total wells drilled, as the goal of 5000 exploratory tests remains the same for next year as it was for this year, although total completions called for in 1945 are 27,000 against the 24,000 programmed (and actually to be drilled) in 1944.

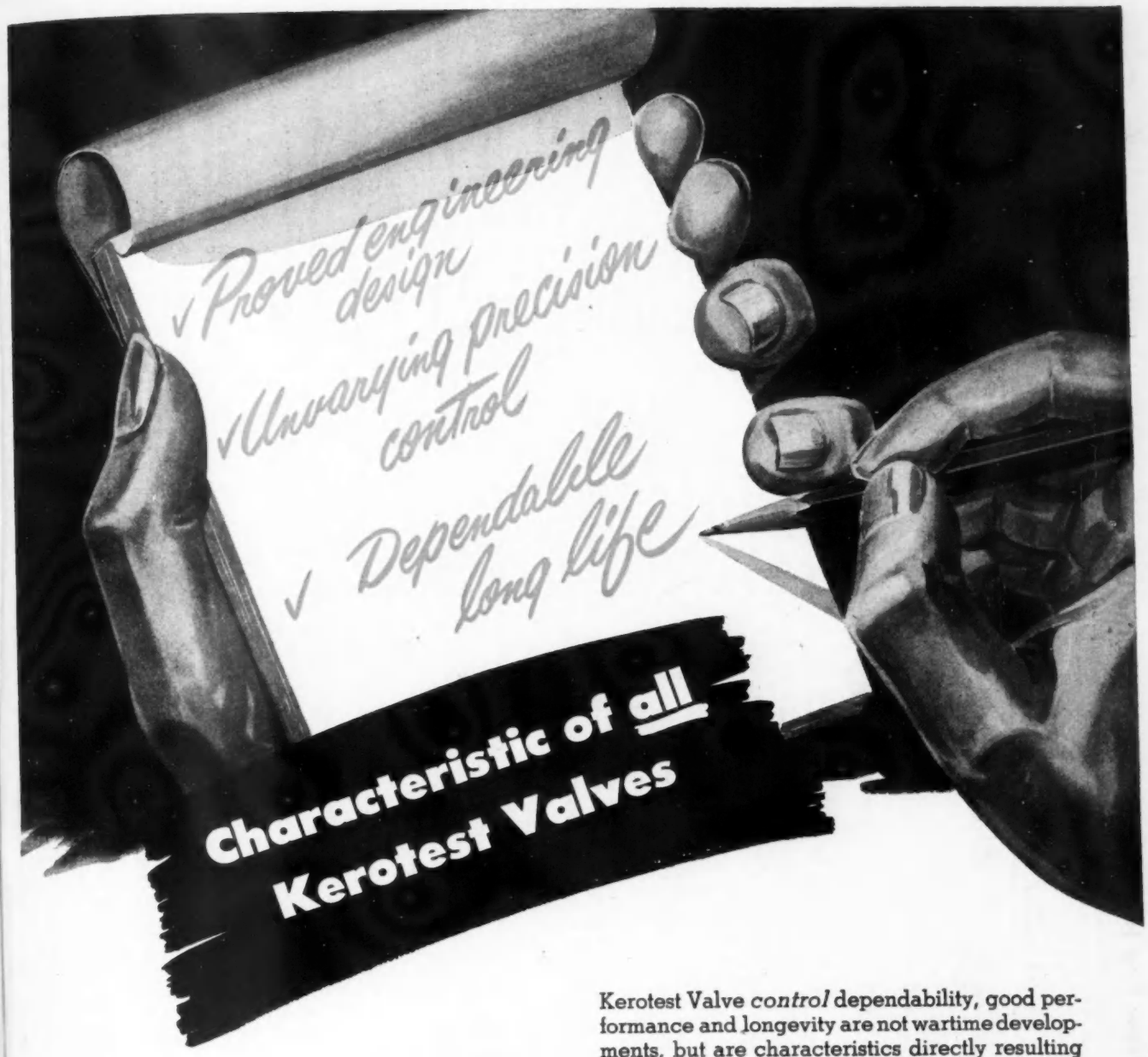
There is no assurance, however, that exploratory completions will follow the desired trend even under the increased total drilling of 1945, because the deterrents to exploration which have prevailed in 1944 are still existent. Probably the heaviest drag on wildcatting is the inadequate crude price set-up, which makes the search for new reserves unprofitable or a losing business effort, the prices being the same as before the war, while costs of all kinds have increased sharply. Not only does it cost more now to carry out leasing, geological and geophysical work, and actual drilling of a given number of exploratory wells; but during the past two years it has become necessary to do more exploration and more drilling to establish a given volume of new reserves, as trend of diminishing returns on prospecting effort has become increasingly evident. This fact was highlighted about 10 days ago in a statement by the PAW. While discoveries made during 1944 may exceed the 1943 total of about 750,000,000 barrels, the statement said, it is not likely that they will be sufficient to offset this year's heavy draft on reserves. In other words, the nation is not finding as much oil as it is using. This experience runs concurrently with a sharply increased and above-normal volume of wildcatting, wihch has been carried out in spite of sub-normal total drilling. Despite handicaps and deterrents, the industry has searched vigorously for new reserves, but results have been disappointing, and financial losses involved in hazardous drilling, under present crude prices, place limits on the possibilities of maintaining or further increasing exploration.

Up through November, there have been 3982 exploratory well completions in the United States this year, an average of 81 per week, and an increase of 17.4 percent over the 69 weekly in the first 11 months of last year. In November the average was 78 per week, compared with 81 weekly in October.

■ CONTINUED ON PAGE 54
■ TABLES ON PAGES 52 AND 53

Results of Exploratory Drilling in November and First 11 Months, 1944-1943, by Districts

	NOVEMBER, 1944													FIRST ELEVEN MONTHS, 1944															
	Productive Tests									Unproductive Tests			Total Exploratory Tests	Productive Tests									Unproductive Tests					Total Exploratory Tests	
	New Fields			New Pays			Extensions			Total Productive	Wildcats	New Pays	Outposts		New Fields			New Pays			Extensions			Total Productive		Wildcats	New Pays	Outposts	Total Dry			
	Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.						Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.	11 Mo. 1944	11 Mo. 1943				11 Mo. 1944	11 Mo. 1943	11 Mo. 1944	11 Mo. 1943
Alabama											4			4	1						2			3		19		2	21	2	24	2
Arizona																										6			6	5	6	5
Arkansas											5			5	2		2				4			8	11	61		1	62	56	70	67
California				2						2	18			20	13	7		6	1		4	1		32	22	241		1	242	143	274	165
Colorado							1			1	1			2	1				1		4			6	1	6			6	5	12	6
Florida																										3			3	4	3	4
Georgia																										8			8	4	8	4
Illinois	1			1			6			8	45			53	22		1	30			28			81	129	352			352	339	433	468
Indiana											10			10	7			1			2			10	7	65			65	79	75	86
Iowa																										2			2	3	2	3
Kansas	4	1					1			6	44			50	48	12					5			65	55	400		6	406	382	471	437
Kentucky				1						1	9			10	12	5	4	4			2			27	20	110			110	109	137	129
Louisiana	1		3				1			5	9			14	9	3	9	10	1	3	4		1	40	38	104		16	120	102	160	140
North			2							2	6			8	2	2	4		1	1	1		1	12	11	65		12	77	84	89	95
South	1		1				1			3	3			6	7	1	5	10		2	3			28	27	39		4	43	18	71	45
Michigan		1		1						2	14			16	10	3		3			2			18	25	194	2	2	198	183	216	208
Mississippi											10			10	2		1				1			4	5	71		11	82	51	86	56
Missouri											1			1											4	7			7	18	7	22
Montana				1						1	5		2	8		3		2			1			6	6	30		3	33	18	39	24
Nebraska																										8			8	29	8	29
New Mexico	1									1	8			9	4	3		1			2			10	7	51			51	45	61	52
Ohio	1	1								1	5			6	2	19					4	17		42		69			69		111	
Oklahoma	3	1		1						5	30			35	34	14		6	3		11	3		71	54	222		3	225	254	296	308
Tennessee																										4			4	1	4	1
Texas	12	1	2	4						19	108	1		128	114	22	12	53	6	6	45	5	8	271	192	1125	15	21	1161	862	1432	1054
E. Texas Border																						3	2	5	3	13			13	5	18	8
Rest of East Texas	2									2	12			14	7			7		1				15	8	104	1	1	106	79	121	87
North Texas	5			3						8	25			33	36	1		17	1		6			61	56	270	3		273	209	334	265
West Central	2									2	14	1		17	12			7	1					20	15	110	2	2	114	106	134	121
West Texas	1									1	13			14	18	2		4			17			41	20	154	7	5	166	69	207	69
Panhandle											1			1												6	1		7	3	7	3
Upper Coast	1	1								2	15			17	9	4	2	4	2	2	6	1	2	32	23	123		4	127	85	159	108
Lower Coast	1		2	1						4	11			15	22	11	9	9	1	3	7	1	3	66	45	160		6	166	141	232	186
Southwest											12			12	8	4	1	4	1		9			27	21	132		3	135	119	162	140
South Central											5			5	2			1					1	4	1	53	1		54	46	58	47
Utah																											1		1		1	
West Virginia					1			1		2				2		2			1			1		4		2			2		6	
Wyoming	1	1		2			1			5	2		2	9	8	1		7	1		3			20	11	15		5	20	8	40	19
Total United States	23	6	5	13	1		10	1		59	328	1	4	392	289	94	29	123	14	9	124	27	9	718	587	3175	18	71	3264	2702	3982	3289



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New Oil and Gas Fields and New Pay Horizons Discovered in the United States in November, 1944

Also Important Extensions to Established Felds

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension
		CALIFORNIA—New Oil Pays									
Kern	Ant Hill	Amerada's S.P. 8-15, sw sw 15-29-29	10- 9-44	11-24-44	4250	3670-3700	Jewett sd; Mio.	F 182; 1″	37.8	M; geol.	Flowed 2 days, died. Will be pumping fld.
Los Angeles	Aliso Canyon	Tidewater's Standard-Sesnon 1-4, sw nw 28-3-16, nw end of Aliso Canyon field.	7-17-44	11-29-44	9170	9075-9150	Sd; Eoc.	F 392; 150 mln.	20.1	Flt Ant.	On nw plunge of fld; sand should underlie whole fld, greatly increasing reserves.
		COLORADO—Oil Field Extension									
Moffat	Powder Wash	Mt. Fuel Supply's Hal Stewart 2, se se ne 32-12n-97w	.....	11-15-44	5210	5150-5260	Wasatch sd; Eoc.	F 480; 5 mln.	....	.....	Sand at 3975-4020 est 8 mln ft gas.
		ILLINOIS—New Oil Field									
Jasper	Willow Hill	Pure's Dhom "A" 1, sw sw se 34-7-10e	11- 3-44	11-28-44	2715	2665-2715	McClosky li; Miss.	P 213	....	.....	2 mi e/ne N. Boos McClosky li pool nearest dry McClosky tests 1¾ mi ne, 2½ mi n, 2¾ mi nw, 1¼ mi s.
		ILLINOIS—New Oil Pay									
Lawrence	Lawrence	Cherry & Kidd's Gray Est. 1, ne ne sw 19-3n-12w	10- 2-44	11- 7-44	2148	2019-2080	Aux Vases-McClosky sd, li; Miss.	P 25; 15 wtr.	....	.....	Dual comp in Aux Vases, McClosky. Aux Vases not recognized as prod formation when old Lawrence Co fld drilled, but many wells went into McClosky.
		ILLINOIS—Oil Field Extensions									
Edwards	Brown, S.	Kingwood's Iles 1, nw nw se, 4-2s-14w	9-30-44	11- 7-44	3112	3028-3030	McClosky li; Miss.	P 12; 41 wtr.	....	.....	1 mi e-ne of discov well, only prev producer in pool. Area untested for 2 mi to s, 3 mi to e.
Edwards	Lancaster, W.	Martin's Bradum 1, se se sw 3-1n-14w	.....	11-14-44	3123	2976-2984	Levias li; Miss.	P 8; 10 wtr.	....	.....	¾ mi w of discovery well. Is old dry hole worked over.
Effingham	Bible Grove	Shulman's F. W. Veith 1, ne nw nw, 34-6n-7e	9-29-44	11-21-44	2541	2530-2541	Cypress sd; Miss.	P 85	....	.....	Extends prod ½ mi n; appears to prove 160 ac.
Franklin	Sesser	Jarvis-Old Ben Coal Co.'s 1 A-2, se ne se, 29-5s-2e	10- 7-44	11-28-44	2866	2856-2866	McClosky li; Miss.	P 40; 60 wtr.	....	.....	1¼ mi s of Sesser pool; no other oil tests in radius of 1½ mi. Extent of prod will depend on unpredictable distribution of porosity.
Macoupin	Carlinville, N.	Gill-Wilson's 1, 990 f s l, 274 fr w l, sw se 29-10n-7w	.....	11-14-44	469	462-469	Pottsville sd; Penn.	P 8	....	.....	1 mi s of N. Carlinville pool, and 505 ft dry hole is half way between. Probably small.
Wabash	Patton, W.	Olds Oil Co.'s Stillwell 2, ne nw ne, 28-1n-12w	10-23-44	11-28-44	2387	2284-2312	Cypress sd; Miss.	P 5	....	.....	Additional productive area probably small.
		KANSAS—New Oil Fields									
Brown	.....	Clifton Gall's Livengood 1, ne nw sw, 3-1n-15e, 6 mi sw Falls City (Neb.) pool.	.....	11-25-44	2591	2578-2590	Hunton li; Sil.	F 100	27	Str-trp; dr.	1st comrcl prod for county; may lead to further dev in ne Kansas.
Graham	.....	Skelly's Davis 1, nwc 15-7s-22w, 8 mi ne Hill City	.....	11- 2-44	3854	3518-3524	Lansing li; Penn.	P 518	39.2	Ant; geop.	Little sub-surface control in area, but considered important strike in central Kansas Uplift.
McPherson	.....	Williams-Morine's Henne 1, swc 4-17s-1w, 1½ mi n Henne pool	.....	11- 3-44	2645	2620-2645	Mississippian li.	P 75	....	Str-trp; dr.	Believe will cover only small area.
Stafford	.....	Phillips' Vivian 1, ne ne se 12-23s-12w, 5 mi nw Zenith pool	.....	11-10-44	3684	3679-3684	Arbuckle li; Ord.	P 330; 5 wtr.	38	Ant; geop.	Fair strike; good porosity and saturation; may cover a sec.
		KANSAS—New Gas Field									
Kearny	.....	Carter's Strong 1, c nw se 27-22s-35w, 10 mi sw Nunn pool	.....	11-27-44	3033	2585-2712	Krider-Winfield dolo; Perm.	F 16 mln.	....	Str-trp; sub.	Possible 14 mi ext to Hugoton gas pool.
		KANSAS—Oil Field Extension									
Pratt	Frisbie	The Texas Co.'s Smith 1, c se se 6-26s-13w, ½ mi w Frisbie pool	.....	11- 1-44	4049	3920-3936	Lansing li; Penn.	P 90	38	Str-trp; dr.	Not considered importnat.
		KENTUCKY—New Oil Pay									
Union	Uniontown	Gulf's Rhea 2, 11-p-19	.....	11- -44	1980	1960-1980	Hardinsburg sd; U. Miss.	P 470	....	.....	Opens new pay for pool.
		NORTH LOUISIANA—New Distillate Fields									
Bossier	Benton	Barnsdall's J. T. Hanks, nw se 7-20n-12w	6-20-44	11-11-44	8386	8001-8040	Cotton Valley sd; Jur.	F 194; ¼″	61	Ant: refl-seis	Single-well reserve est 1,000,000 barrels.
Lincoln	.....	California Co.'s Jessie Mae Norris, c nw ne 15-18n-1w	.....	11 -44	9768	9060-9080	Cotton Valley sd; U. Cre.	F 97.3; 1/8″	57.2	Ant; refl-seis	Est 750,000 barrels reserve.
		SOUTH LOUISIANA—New Oil Field									
Acadia	.....	Phillips' Onezime 1, 1653.7 s 11° 31 mins w of nec 16-10s-1e, Crowley area.	.....	10- 4-44	10000	9738-9741	Vicksburg sd; Olig.	F 33; 11/64″	47.5	Flt.	Single-well est 100,000 barrels.
		SOUTH LOUISIANA—New Distillate Field									
Calcasieu	L. Charles, S.	Continental's Glen Greathouse 1, 330 n & e of swc 9-11s-8w, 5 mi e of East Moss Lake fld.	7-27-44	11- 4-44	11019	10018-10026	Miocene sd; Mio.	F 130; 11/64″	52.9	D; seis.	Single-well reserve 150,000-200,000 barrels.
		SOUTH LOUISIANA—Oil Field Extension									
Vermilion	Gueydan, W.	Pure's Ferguson-Benoit 1, 1008.5 n 330 w of sec sw¼ 5-12s-2e	.....	11- 4-44	10006	9619-9623	Miocene sd; Mio.	F 213; 1/8″	36.9	.....	¼ mi se extension; adds approximately 200 ac.
		MICHIGAN—New Gas Field									
Mecosta	Martiny	Mich. Consol. Gas Co.'s Evans 1, nw se sw 12-15n-8w	10-30-44	11-12-44	1391	1383-1389	Michigan stray sd; Miss.	F 0.61 mln.	....	Geol.	Small area. 6 mi s Ford oil-gas fld.
		MICHIGAN—New Oil Pay									
Ogemaw	Rose City	Muskegon Dev. Co.'s State A3, nw ne nw 29-24n-2e	7- 5-44	11-30-44	2055	2053-2055	Traverse li; Dev.	F 180	....	.....	.....
		MONTANA—New Oil Pay									
Carbon	Dry Creek	Ohio Oil's Northern Pacific 18, ne ne sw 3-7s-21e, 15 mi nw Elk Basin fld.	.....	11-10-44	8882	5905-5945	Morrison sd; Jur.	P 300	50	Ant; geol.	Elev. 4552 ft. Tops: Morrison 5905, Sundance 6050, Embar 6858, Tensleep 6870, Amsden 6985, Madison 7170.
		NEW MEXICO—New Oil Field									
Eddy	.....	P. F. English's Hinkle 1, c ne ne 22-19s-31e	.....	7-24-44	2599	2370-2435	Yates sd; Perm.	P 15	....	Ant; geol.	Not important. 1⅝ mi w of 2700 ft prod in W. Lusk fld.
		OHIO—New Gas Field									
Monroe	.....	Tavern O. & G. Co.'s C. D. McKinney 1, sec 21 Seneca twp	.....	11-15-44	1026	935-1026	Keener sd.	F 1.38 mln.	....	.....	Shallow sd; will encourage more dr in area.
		OKLAHOMA—New Oil Fields									
McClain	.....	Carter's Johnson 1, csw se 30-8n-2w, about 3½ mi w of Noble	.....	11-15-44	8222	8190-8222	Wilcox sd; Ord.	F 322; 11 wtr.	40	Ant; geop.	As another deep Wilcox prodcr w of Nemaha Ridge, is important; prod disapponting, sd not thick enough; may be edge well.
Pottawatomie	.....	Cities Service's Harbour 1, ne ne nw 13-9n-2e, 2 mi s Center Point gas fld.	.....	11-12-44	5798	4946-4952	Earlsboro sd; Penn.	P 47	....	Ant; seis.	Probably small prod area; test dry in Wilcox, slight show in Hunton.
Tulsa	.....	S. M. Evans' Switzer 1, se se nw 13-22n-12e, 2 mi ne Skiatook	.....	11-19-44	1520	1515-1520	Burgess sd; Penn.	F 100	38	N; dr.	Local feature; may cover ¼ sec.
		OKLAHOMA—New Gas Field									
Marshall	Aylesworth	M. A. Neff's Jones 1, ne nw nw 19-6s-7e	.....	11-15-44	2911	2870-2885	Bromide sd; Ord.	F 19.78 mln.	....	Ant; geop, dr.	Opens area on n flank Aylesworth oil pool.
		OKLAHOMA—New Oil Pay									
Tulsa	Sand Springs	A. W. Swift's Anthis 3, ne sw sw 13-19n-10e	.....	11-20-44	1190	1175-1190	Mississippian li.	F 200	36	Fld, ant; dr.	1st comerl prod in Mississippian for Bartlesville sd area.
		EAST TEXAS—New Oil Fields									
Hopkins	Pickton	Humble's C. D. Nichols 1, 660 ft nsl and 690 ft wel of 151.12 ac ac tr, or 1500 ft snl and 600 ft wel Isaac Friddie sur, 4 mi ne Coke fld 6300 ft Paluxy prod.	6-13-44	11-10-44	8853	7888-7896	Bacon li; L. Cre.	F 620; ¼″	50.2	Ant; geop.	Most likely involves 1st prod below Paluxy for county large prod area, trending sw-ne; good outlook for multi-pay oil zones on apex of struc, although showed comrcl prod in single zone, which is thin.

Marshall...	Aylesworth...	**OKLAHOMA—New Gas Field** M. A. Neff's Jones 1, ne nw nw 19-6s-7e	.....	11-15-44	2911	2870-2885	Bromide sd; Ord.	F 19.78 mln.	....	Ant; geop, dr.	Opens area on n flank Aylesworth oil pool.
Tules.....	Sand Springs..	**OKLAHOMA—New Oil Pay** A. W. Swift's Anthis 3, ne sw sw 13-19n-10e	.....	11-20-44	1190	1175-1190	Mississippian li.	F 200	36	Fld, ant; dr.	1st comerl prod in Mississippian for Bartlesville sd area.

Hopkins...	Pickton.....	**EAST TEXAS—New Oil Fields** Humble's C. D. Nichols 1, 660 ft nsl and 690 ft wel of 151.12 ac ac tr, or 1500 ft snl and 600 ft wel Isaac Friddie sur, 4 mi ne Coke fld 6300 ft Paluxy prod.	6-13-44	11-10-44	8853	7888-7896	Bacon li; L. Cre.	F 620; ¼"	50.2	Ant; geop.	Most likely involves 1st prod below Paluxy for county large prod area, trending sw-ne; good outlook for multi-pay oil zones on apex of struc, although showed comrel prod in single zone, which is thin.
Robertson..	Calvert.....	Hamman O.&R.Co.'s P.C.Gibson 1, 1000 ft from se and 1700 ft from nw lines 1825-ac lease, Jesse Webb sur, 5½ mi s by w of Calvert.	.....	11-27-44	5017	2181-2194	Basal Navarro sd; U. Cre.	P 70	38	Flt; geol.	Temp abnd June, 1944; plugged back and worked over. Small prod area to proximity of failures.
Archer.....	.....	**NORTH TEXAS—New Oil Fields** J. W. Carter-T. H. Whitaker's W. H. Taylor 1, 1850 ft nsl and 630 ft ewl John Smith sur A-377, blk 458, Geraldine townsite.	6-25-44	11- 6-44	1615	1611-1615	Cisco sd; Penn.	P 24; 4 wtr.	....	Ant; geol.	Not important. ⅜ mi ne depleted pool.
Archer.....	.....	White-Duncan's J. T. Richardson 1-C, 939 ft wel and 1890 ft snl blk 10, J. Scott sur A-374.	9-25-44	10-28-44	1220	1216-1220	Cisco sd; Penn.	P 9½	....	Ant; geol.	Unimportant because of nearby decisive failures. ⅝ mi sw prod but separated b dry holes.
Clay.....	West Ross..	Fain-C. P. McGaha-Drlg & Explo. Co.'s O. A. Ross 1, 1800 ft snl and 430 ft wel BBB&C Ry sec 7, A-19.	9-16-44	11- 8-44	5680	5395-5435	Bend congl; Penn.	F 822; ½"	42	Ant; geol.	7/8 mi sw Ross fld, but separated by failure that showed steep, narrow syncline. Flwd by heds fr Ellenburger at 5648-5680, 1st Elbgr prod for area, enhancing importance, but prod area speculative.
Cooke.....	Sivels Bend..	Texas Co.'s W. B. Rasure 1, 660 ft out of nec w 224 ac John Maasingill sur, A-687, 10 mi nw Walnut Bend fld.	7-11-44	11-30-44	7518	6755-6763	Strawn sd; Penn.	P 139	35.6	Ant; geop.	Heads oil when agitated; better well than official rating. Pay thickness below par for depth.
Jack.....	.....	Continental's Wm. L. Risch 1, 880 ft out of sec 13, blk 2, 4 mi e of 4500 ft gasser.	8- 3-44	11-24-44	6407	4380-4420	Bend li-congl; Penn.	F 392	41	Ant; geop, geol.	Not capacle maintaining rated potential, taken after presr build-up. Prod of area likely to be erratic.
Wichita....	K-M-A.....	**NORTH TEXAS—New Oil Pays** Texas Co.'s First Nat'l Co-Kemp-Allen 27, 330 ft out nec s½ lot lot 15, blk 26, KWVFL sur, DD fr Strawn prod at 3845 ft; 3⅛ mi ne Ellenburger prod.	3- 1-38	11-19-44	4160	4114-4160	Ellenburger dolo; Ord.	F 48; ¼"	40	Ant; geol.	Involves local Ellenburger high, separate from K-M-A-Ellenburger fld; oil yield sub-normal; prod due to be erratic.
Wichita....	K-M-A.....	Texas Co.'s Fred Thom 15, 330 ft snl and 1615 fr ewl s 219-ac lse, W. H. Spillers sur A-257, twin to 3800 ft Strawn and Ellenburger wells, 7000 ft e nearest shallow prod.	11- 8-44	11-30-44	1805	1795-1804	Cisco sd; Penn.	P 184	....	Ant; geol.	Presence of this pay noted from logs of Strawn and Ellenburger prod that passed up max of 25 ft oil-saturated sd. Shallow zone to be small but attractive.
Wichita....	Madden.....	Jas Stewart & Co.'s E. B. Madden 3, 100 ft nsl and 467 ft wel blk 8, Wm. Mayer sur A-193, 1350 ft se 4300 ft Strawn discov. pumper	10-20-44	11-20-44	5131	5072-5092	Bend li; Penn.	F 1440; ½"	40	Ant; geol.	Single-well reserve 200,000-240,000 bbls. Considered imprtnt Bend strike as flds discov. failed make adequate test of saturation in plug-back while Ellenburger failure to ne, lower on struct had oil satrtn in Bend.
		WEST CENTRAL TEXAS—New Oil Fields									
Shackelford.	.....	Fortex Oil Corp.'s Gladys Smalley 2, 1960 ft nsl and 1700 ft ewl E. T. Ry 13, blk 10.	10- 7-44	11- 1-44	635	631-635	Fry sd; Penn.	P 12	....	Ant; geol.	Not important. 4,000 ft nw nearest prod but separated by failures.
Taylor.....	.....	Great Lakes Carbon Corp.'s W. E. Jones 1330 ft nsl and 2942 wel of Wm. Bishop sur No. 43.	9- 7-44	11- 6-44	2508	2005-2034	Flippen li; Penn.	P 50; 20 wtr.	39.5	Ant. geol.	Not important. 5¼ mi nw Lake Kirby pool's 3393 ft Palo Pinto discovery.
		WEST TEXAS—New Oil Field									
Gaines.....	.....	Humble's M. S. Doss 1, c sw sw psl sec 9, blk 2-24, 3¼ mi nw of Robertson 1-well 5900 ft pool.	3-30-44	11-28-44	9049	7030-708-	Clear Fork li; Perm.	F 210; ¼"	33.6	Ant; geop.	Initial flow sub-normal for depth, but considered forerunner of important fld. 9¾ mi ne Fullerton, nearest Clear Fork area.
		UPPER TEXAS GULF COAST—New Oil Field									
Jefferson...	N. Lovell Lke.	Humble's Jefferson Land Co. C-1, 466 fr el 467 fr sl Shelby Corsine sur A-14 blk 7, nw flk 3600 n fr nearest 7700-ft sd well.	.....	11- 9-44	9963	7176-7180	Frio sd; Olig.	F 86; 1/8"	38.9	D flk; dr.	Single-well reserve 80,000-100,000 barrels.
		UPPER TEXAS GULF COAST—New Gas Field									
Hardin....	Village Mills..	Houston Oil of Texas-American Republic's Fee-Hardin County sch. Land Fee 1, 467 fr el fr nl 956.7 ac lse.	9-24-44	10-31-44	7006	5770-5812	Cockfield sd; Eoc.	F 47 mln; 4/64"	....	.....	Fair gas reserve. 5 mi s Warren.
		LOWER TEXAS GULF COAST—New Oil Field									
Bee.....	.....	Magnolia's W. E. Erp 1, 330 fr s & wl 1349.5 ac lse J. B. Atkins sur.	.....	11- 3-44	7605	7974-7978	Wilcox sd; Eoc.	F 80; 27 sw; 4/64"	35.3	Ant.	Relatively unimportant; low relief; has thin sds with oil, gas, water. 9 mi w Pettus.
		LOWER TEXAS GULF COAST—New Distillate Fields									
Brooks.....	.....	Standard of Texas's Braulia G. deGarcia 4, 2229 fr wl 3437 fr wly el 2475 fr sly sl 2161 ac tr 12,000 fr sl L. Encentada Gr.	2- 2-44	11-15-44	8106	7387-7400 7410-7420	Vicksburg sd; Olig.	F 250; 11 mln.	....	D; sub.	Single-well reserve 360,000-400,000 barrels.
Karnes....	Porter Area...	H. R. Smith-W. C. McBride's W. C. McCaskill Jr. 1, 1384 fr swl swl 467 fr sel McCaskill's 200 ac tr, just s pettus prod, 160 ac tr, Victor Blanco sur.	.....	11-17-44	8650	7400-	Carrizo-Wilcox sd; Eoc.	F 108; ¼"	50.8	Flt; seis.	Single-well reserve 100,000 barrels.
		LOWER TEXAS GULF COAST—New Oil Pay									
Refugio....	Bonnie View..	P. R. Rutherford-Royal O. & G. Co.'s Henry Schirmer 1, 467 fr s & wl 160 ac lse 467 fr n & wl ne¼ sec 25	10-15-44	11- 3-44	4582	4564-4581	Upper Greta sd; Olig.	F 125; 1/8"	23.7	.....	Single-well reserve 180,000-200,000 bbls. 7 mi s Woodsboro.
		WEST VIRGINIA—New Gas Pay									
Wyoming..	Baileyville....	Godfrey L. Cabot's Hunter-Ford 1148	.....	11-15-44	3571	3537-3571	Berea sd; Miss.	F 2.7 mln.	....	.....	.....
		WEST VIRGINIA—Gas Field Extension									
Kanawha...	Elk-Poca.....	United Fuel Gas Co.'s Edward Gebhart	.....	11-11-44	5405	5403-5405	Oriskany sd; Devo.	F 2 mln.	....	.....	Though limited n and s by dry holes, area sufficient for more tests.
		WYOMING—New Oil Field									
Fremont...	Crook's Gap..	Sinclair Wyoming Oil Co.'s State 1, nw sw nw 18-28n-92w	.....	11-10-44	5391	5234-5391	Lakota sd; L. Cre.	F 1800; 25/64	37	Ant; geol.	Light oil pool. Well shut in for storage.
		WYOMING—New Gas Field									
Carbon....	Belle Springs..	Rocky Mountain Gas Co.'s Johnston 1, c ne sw 6-23n-88w	.....	11- 1-44	3852	2580-2600	Sundance sd; Jur.	F 4 mln.	....	Ant; geol.	Field is 10 mi s Mahoney fld.
		WYOMING—New Oil Pays									
Fremont...	Big Sd. Draw.	Sinclair Wyoming Oil Co.'s Unit 1, sw nw nw 14-32n-95w, gas fld deep test.	.....	11-25-44	7338	7285-7338	Tensleep sd.	F 504	35.5	Ant; sur, geol.	Major strike. Also dr stm tested 32.5 grav oil in Embar 6930-7060 ft. Near top structure of 1300 ft closure. May lead to Embar-Tensleep prod below present pays in nearby Muskrat, Beaver Crk, Alkali Butte flds.
Hot Springs	Kirby Creek..	Pacific Western Oil Corp.'s Govt. 1, se ne ne 21-43n-92w	.....	11-10-44	4427	3420-3493	Embar li; Perm.	F 150	22	Ant; geol.	Small black-oil pool. 1st deep test in fld where 25 wells drld to Frontier sds, U. Cre, at 400 ft, now abnd except few strippers. This well found only water below Embar in in Tensleep topped 3678 ft and Madison topped 4342; TD 4427; PB to Embar.
		WYOMING—Oil Field Extension									
Carbon....	Cooper Cove..	Standolind's Johnson-Parkinson 2, ne sw nw 20-18n-77w	.....	11-25-44	4854	4840-4854	Dakota sd; U. Cre.	S 89; 103 wtr.	....	Ant. geol.	½ mi nw Dakota sd discov, ¼ mi e of fld's 2nd test, a dry hole. On very narrow anticline on Rock River fold.

[1] Character of producing formations abbreviated thus: ch, chalk; dolo, dolomite; li, limestone; sd, sandstone; sh, shale, ser, serpentine; cgl, conglomerate. Ages of formations abbreviated thus: Pleis, Pleisocene; Mio, Miocene; Olig, Oligocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.
[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million cubic feet of gas daily open flow capacity; size of choke given in inches. [3] Type structure abbreviated as follows: Ant, Anticline; D, Dome; Fld, Fold or Folded; Flt, Fault or Faulted; M, Monocline; N, Nose; SD, Salt Dome; Str trp, Stratigraphic trap; Syn, Syncline; Ter, Terrace. [4] Method of discovery abbreviated as follows: cd, core drilling; dr, drilling; geol, geology; geop, geophysics; grv, gravity meter; ran dr, random drilling; seis ,seismograph; sub, subsurface geology; sur, surface geology.

November Exploration Law

■ CONTINUED FROM PAGE 50

The 17.4 percent gain over last year in exploratory drilling is not in proportion to the increase in all drilling, which is up 26.6 percent this year. (See THE OIL WEEKLY, December 18, page 14.) Furthermore, while November exploration was slightly below this year's monthly average, the current rate of completing all wells is somewhat above the average for the year.

Of all exploratory tests completed this year, only 17.3 percent have been successful, compared with 18.8 percent last year. In November, only 14.1 percent were productive, a substantially lower ratio than for 1944 as a whole or for last year.

It is noteworthy that there has been relatively less success this year in establishing new reserves by extending fields or finding new pay zones than by opening entirely new producing areas. Apparently, the possibilities in and around established fields are narrowing, and it becomes increasingly necessary to do the more hazardous and expensive exploration of "rank" wildcatting. In the face of the 17.4 percent increase this year in total exploratory completions, oil discoveries in the form of new pays are up only 4.2 percent, and the number of oil field extensions is up less than 1 percent, while discoveries of new oil fields are up 16.5 percent. In finding distillate and gas, also, there have been relatively better results in finding new fields than in opening new pay horizons, although extensions of distillate and gas fields have been comparatively numerous.

Wyoming Discovery

Among the discoveries of November there were only a few of major importance, including several in Texas and an outstanding strike in Wyoming. In Eastern Texas a wildcat opened the new Pickton oil field in Hopkins County, which probably will be large in area and which may have several pay zones on the top of the structure. Productive in the upper Rodessa lime at 7888-7896 feet, the well affords the first production below the Paluxy for the county. Robertson County, eastern Texas, gained its first commercial production by discovery of the Calvert field.

In North Texas an important strike was made by opening of production from the Bend lime in the Madden field, Wichita County. The new Sivels Bend oil field, Cooke County, from 6755-6763 feet is yielding the deepest Strawn sand production in North Texas.

In West Texas an important new oil field is in prospect in Gaines County, following discovery of a new producing area 10 miles northeast of the Fullerton field, being productive from the Clear Fork lime at 7080 feet.

The especially important strike in Wyoming in November was the opening of deeper production in the Big Sand Draw field, Fremont County. A deep test was completed there in the Tensleep sand at 7285-7338 feet, after having shown commercial production potential also in the Embar formation at 6896-7060 feet. The well flowed at rate of 500 barrels 35.5 gravity oil per day from the Tensleep, and on drill-stem tests had yielded 32.5 gravity oil from the Embar. It is near the top of a structure with proved closure of 1300 feet and ½ mile from a big gas well completed in 1928 in the Frontier formation at 2917 feet. The field is in the Wind River basin, south of the Big Horn basin, being on a 2000-acre unit-development unit. The strike indicates good deeper-pay possibilities in the Muskrat gas field 18 miles to the northeast, the Beaver Creek field 10 miles northwest, and Alkali Butte field 10 miles to the north, all of which are untested to the Embar or Tensleep.

An accompanying table embodies remarks on the significance of the various strikes of November in all districts.

Summary of Results of Exploratory Drilling

Completions are from weekly reports and cover 4 weeks in October, 1944; 5 weeks in November, 1944; 48 weeks in January-November, 1943; 49 weeks in January-November, 1944

ITEM	Oct., 1944	Nov., 1944	ELEVEN MONTHS JAN.-NOV. 1943	1944	Percent Diff.
Oil Discoveries	**38**	**36**	**366**	**412**	**+ 12.6**
New Fields	33	23	248	289	+ 16.5
New Pays	5	13	118	123	+ 4.2
Distillate Discoveries	**1**	**5**	**22**	**38**	**+ 72.7**
New Fields	1	5	15	29	+ 93.3
New Pays			7	9	+ 28.6
Gas Discoveries	**7**	**7**	**63**	**108**	**+ 71.4**
New Fields	6	6	50	94	+ 88.0
New Pays	1	1	13	14	+ 7.7
Total Discoveries	**46**	**48**	**451**	**558**	**+ 23.8**
Extensions to Fields	**10**	**11**	**136**	**160**	**+ 17.6**
Oil Fields	8	10	123	124	+ 0.8
Distillate Fields			3	9	+200.0
Gas Fields	2	1	10	27	+170.0
Total Prod. Tests	**56**	**59**	**587**	**718**	**+ 22.3**
Dry Holes	**267**	**333**	**2,702**	**3,264**	**+ 20.8**
(Weekly Average)	67	67	56	67	+ 19.6
Wildcats	258	328	2,667	3,175	+ 19.0
New Pays	3	1		18	
Outposts	6	4	35	71	+102.9
Total Expl'tory Tests	**323**	**392**	**3,289**	**3,982**	**+ 21.1**
(Weekly Average)	81	78	69	81	+ 17.4
Percent Productive: (Weekly Average)	17.3	14.1	18.8	17.3	
Percent Dry: (Weekly Average)	82.7	85.9	81.2	82.7	

Heavier Charges in Gulf Exploratory Work Allowed

As a result of recent tests conducted under supervision of the Department of Conservation of Louisiana, on the effect of heavy charges of explosives in the Gulf of Mexico, heavier charges will be permitted in seismograph exploration under water, in Louisiana.

Charges up to 800 pounds will be allowed in the Gulf of Mexico. Permission to detonate such charges, however, must be obtained from the commissioner of the department of wildlife and fisheries. Such a precaution is necessary, it is said, due to insufficient knowledge of the effects of high explosive charges on oysters.

Through further research it is hoped, however, to determine such effects.

Barkdull to Retire

Standard Oil Company (Indiana) has announced that Charles J. Barkdull, executive vice president, will retire on annuity, January 1, 1945.

President Edward G. Seubert said it is "with reluctance we lose him from top management but with understanding of his desire for relief from the business cares he has handled so ably for many years."

Airtight State Laws Would Keep Off Federal Control

W. T. Holliday, president of Standard Oil Company of Ohio, addressing an Oklahoma City Chamber of Commerce oil forum, urged oil-producing states to make their conservation laws as airtight as possible in order to avoid federal interference and sidestep outside regulation of the petroleum industry. He added that the issue of control which has been at the root of the controversy between individual states and the federal government can only be settled by the states themselves who must show that they are capable of enacting conservation laws as good or even better than theorists contend can be done by the federal government.

"This places a heavy obligation on oil producing states," Holliday pointed out, "and if they wish to preserve their states' rights, it behooves them to make their state conservation laws as perfect as possible, and then to coordinate the states' administration of those laws toward the prime objective of national welfare."

Holliday lauded the oil compact method of dealing with oil regulation practice from the national standpoint and declared that the problem of conservation, together with the preservation of free competitive enterprise can best be solved through cooperative action of the states.

Pacific Section of AAPG Announces Committees

Committees of the Pacific Section, American Association of Petroleum Geologists, for 1945, have been announced by Glen Bowes, president, as follows:

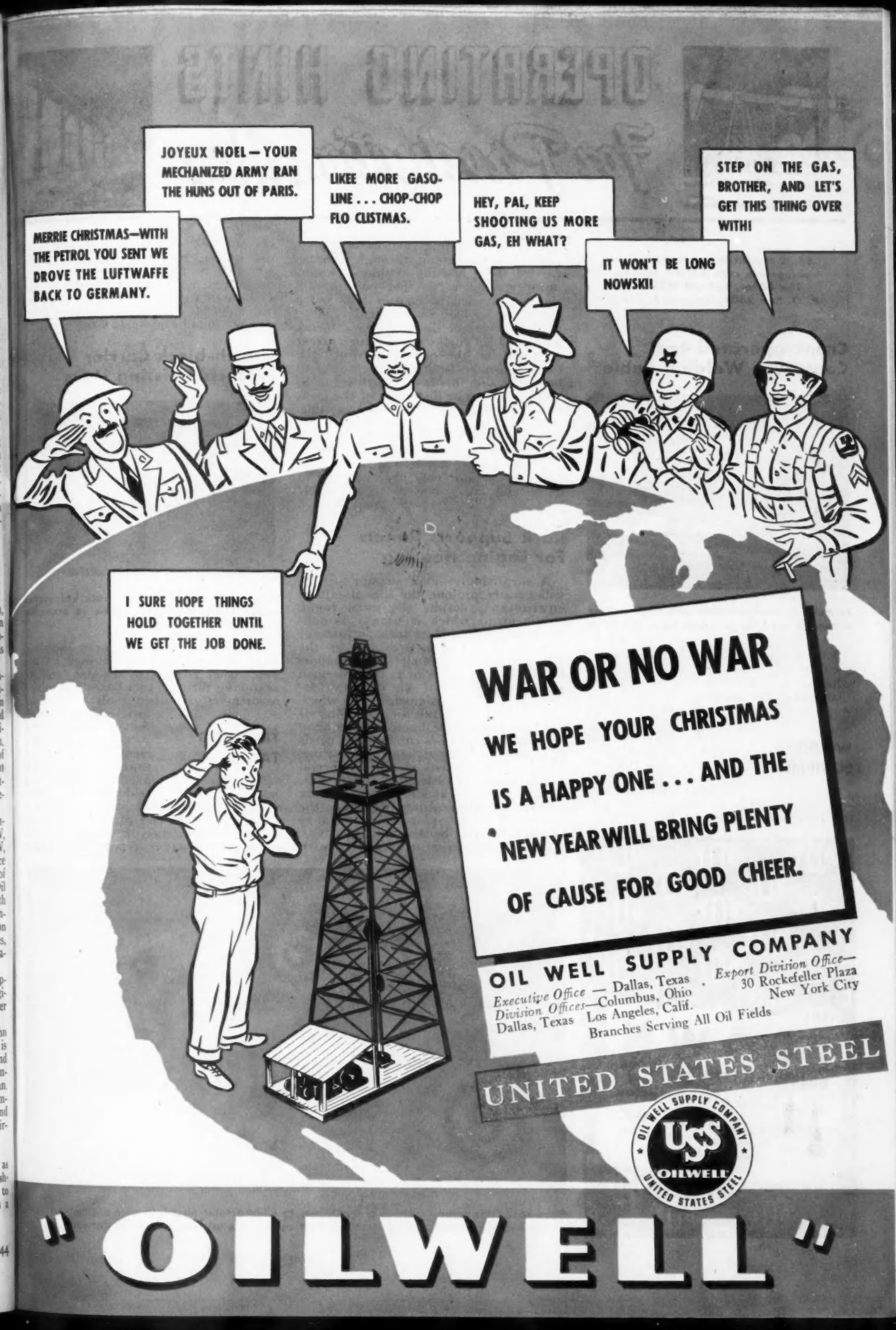
Elmo Adams, Honolulu Oil Corporation, and Frank A. Bell, Shell Oil Company, will represent the AAPG in advising with the Reconstruction and Reemployment Commission of California on its postwar mapping program. They will present the viewpoint of petroleum exploration and development to the Areal Mapping Project Committee of the Reconstruction and Reemployment Commission.

The classification committee is composed of Albert I. Gregersen of PAW, chairman; Frank S. Parker of PAW, alternate chairman; James R. Dorrance of The Texas Company, Mason Hill of Richfield, and Harvey Lee of Union Oil Company. This group will advise with the Division of Oil and Gas, PAW, Conservation Committee, and operators on the naming of oil fields, pools, and zones, and it will handle statistics on exploration.

Dorrance, Lee and Parker were appointed to the nomenclature and engineering subcommittee of the Stripper Well Industry Advisory Committee.

For the 1945 annual convention John Hazzard of Union Oil Company is chairman of the program committee and W. P. Wynham of Standard Oil Company of California is a cochairman. John McMillan of Fullerton Oil Company is chairman of arrangements and Jerome O'Brien, consultant is cochairman.

WILLIAM B. BARFIELD has resigned as assistant purchasing agent of British-American Oil Producing Company to join Sinclair Prairie Oil Company as a safety engineer.


MERRIE CHRISTMAS—WITH THE PETROL YOU SENT WE DROVE THE LUFTWAFFE BACK TO GERMANY.
JOYEUX NOEL—YOUR MECHANIZED ARMY RAN THE HUNS OUT OF PARIS.
LIKEE MORE GASOLINE . . . CHOP-CHOP FLO CLISTMAS.
HEY, PAL, KEEP SHOOTING US MORE GAS, EH WHAT?
IT WON'T BE LONG NOWSKI!
STEP ON THE GAS, BROTHER, AND LET'S GET THIS THING OVER WITH!
I SURE HOPE THINGS HOLD TOGETHER UNTIL WE GET THE JOB DONE.
WAR OR NO WAR
WE HOPE YOUR CHRISTMAS IS A HAPPY ONE . . . AND THE NEW YEAR WILL BRING PLENTY OF CAUSE FOR GOOD CHEER.
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OPERATING HINTS *For Production Men*

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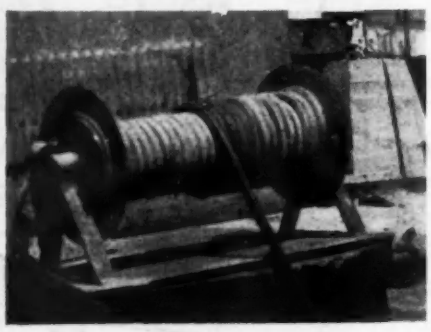
Crank-operated Reel Conserves Welding Cable



Permanently attached cable, with brush contact, eliminates need for stringing loose conductor.

WELDING EQUIPMENT

Eliminating the need for trailing all the welding cable across the ground when only a short section is needed to span the gap between generator and work, one welder equipped his truck with a reel for each cable, making the end of the cable fast to the reel with an electrical contact, and insulating the reel on bushings so the winding element became a part of the electrical circuit. A contacting ring on one flange completes the circuit through a brush carried in a housing within a waterproof receptacle, so that current will flow unimpeded no matter how much cable may remain on the reel.

The flanges of the reel are of metal, being welded to the spindle for current carrying, but the core upon which the cable is wound is of wood, grooved to take the cable in smooth, even turns, to avoid crushing or distortion of the insulation on the inner wraps of the cable.

A crank attached to the axle of the reel on the end overhanging the rear of the truck provides for quick winding in of the cable, the setting being such that the operator may use one hand to guide and apply tension to the cable while the other turns the crank.

Rack Supports Panels For Engine Housing

ENGINE MOUNTING

A surprisingly small amount of care will greatly prolong the life of oilfield equipment, despite the usual rough treatment to which it usually is subjected. An example of such an instance is provided in the small stand support which the foreman of one company designed, and on which the side sections of the pumping engine hood may be hung whenever that unit is running and needs additional air circulation for cooling. The support consists merely of several short pieces of salvaged 1-inch pipe welded together as shown and having two short horizontal pins welded to the horizontal cross-bar on which the lugs of the hood may be suspended.

A neat installation such as that shown not only will preserve the equipment at the outset, but also will inspire the men to continue its upkeep and see that the engine hood sections are not bent or injured through mishandling or being stepped on merely because there was no suitable place to hang them.

Snatch-block Carrier Protects Hoisting Units

Strap steel, supported below truck bed, carries snatch blocks and other tackle in accessible location.

TRUCKING TACKLE

Stowage of snatch blocks, hoisting links and towing cable fittings on the field truck usually requires endless searching through tool boxes and mixed assortment of other tools before the article can be found. Solving this problem in a simple and efficient manner, the superintendent of one production crew unit had the company welder install a semi-circular flat steel bar rack beneath the bed of the read end of the truck. The resulting installation (shown in the photograph) serves as a rack on which

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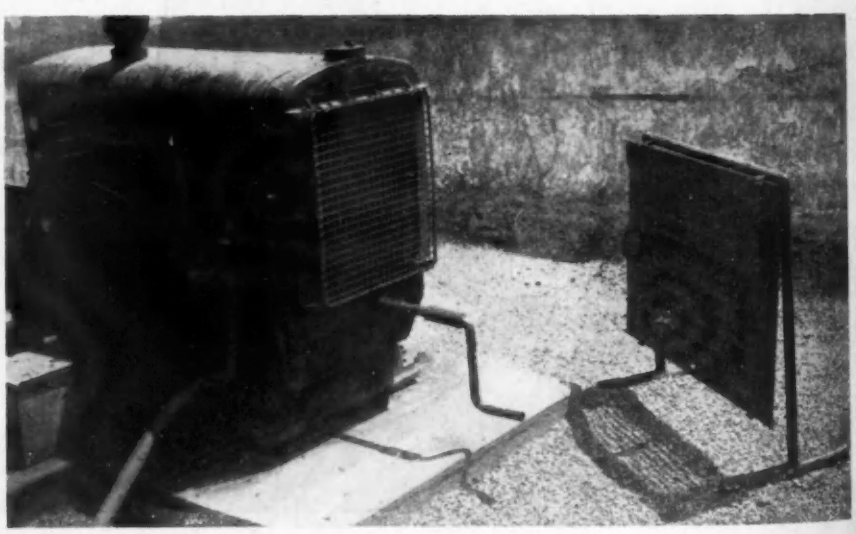
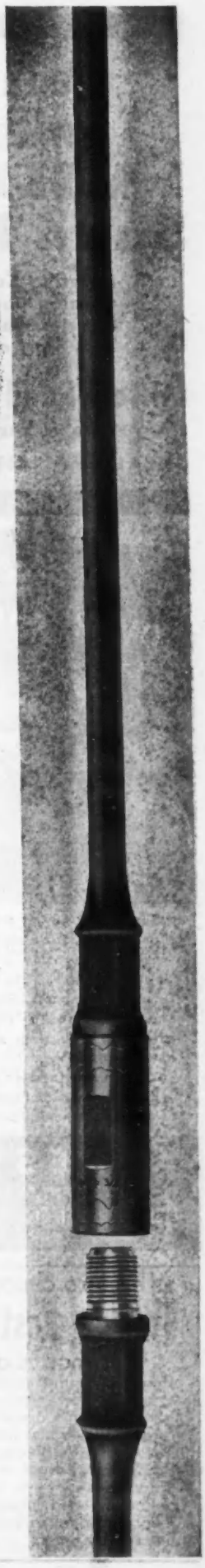


When conditions require removal of hood sides to allow greater air sweep over engine, this light pipe rack supports panels, protecting them against loss or damage through carelessness.

THIS SPECIAL COUPLING *RESISTS* ABRASION and WEAR



The sucker rod coupling shown above is something very special. It's the Bethlehem stellited coupling, intended for use in wells in which abrasion and wear reach serious proportions.

Notice the band of stellite around each end of the coupling? The tops of these bands are raised slightly above the coupling surface. This provides areas of contact with the tubing—yet does not interfere with the flow of oil or the use of fishing tools.

The Bethlehem stellited coupling gives lengthy service because of the low coefficient of friction of the stellite bands—0.11 to 0.15 for stellite compared with at least 0.20 for steel. And it has these worthwhile advantages: superior wear-resisting properties, less corrosion, less wear on tubing, and reduced stresses on sucker rods.

The Bethlehem stellited coupling conforms to API standards. You'll find it a great help in solving many of your difficult lifting problems. Give it a try real soon.

Bethlehem Sucker Rods

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"They were having trouble with quicksand so they drove pipe with perforated ends into the sand and extracted the water in vacuum. The header is 6"ID steel pipe, approx. 200' long. The 51 intake lines are 1½"ID, 4' apart."

The Dresser Couplings on these lines have been used 15 times.

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BE SURE TO CHECK . . . .

Trading Post Section

ON PAGE 75 OF THIS ISSUE

Because of the scarcity of certain types of new equipment and the fact that some operators may have a surplus of some items and a serious shortage of others, this **Used Equipment Forum** is performing a valuable service to operators in locating needed used materials or disposing of surpluses that may be needed by others.

may be suspended the blocks and other fittings and at the same time provides a towbar fitting of considerable strength and easy access. Not only is the desired tool easily seen and removed in a short time but removal of that class of equipment from the bed allows more orderly segregation and stacking of materials which must be carried atop the truck bed.

Walking Beam Backrest Speeds Well Servicing

Welded up from scrap pipe, this rest takes weight of rod line and holds beam clear of well head.

By welding a short upright cradle and stand to the back side of small stripper well jacks, the production department of one company is able to pull the wells without having to dismount the jack, and fewer man-hours are spent on non-productive work, to say nothing of being able to get the wells back on production sooner. The support is welded in such a position that the walking beam is off center and will rest in the cradle of its own weight, but ordinarily the weight of the pull-line will supply additional tension to hold it firmly in place. The support consists of 2-inch pipe and the cradle is a cut-out piece of 3-inch pipe laid across the top of it and welded in place.

SERVICING ACCESSORY

While most light jacks of this type have as their sampson post saddle bearing an open bearing in which the beam can oscillate in a bath of heavy oil, this type has an enclosed one which is lubricated with a large-capacity grease cup. By using a hard grease the jack can operate for several days at a time with but little attention since dust and rain can not reach the inner bearing surfaces. Because of the work involved in dismounting a bearing of this type, the jack arm rest is of considerable value in speeding up well-pulling work.

Channel Steel Dogs Anchor Separator

A method of anchoring oil and gas separators on field installations which are likely to be only temporary may be improvised in the quick, simple manner employed by one operator. Prior to setting up the separator, a small concrete base is laid, with only four small anchor bolts set in it while the cement is still wet. The separator is placed in the center of this concrete mat and four short sections of light channel iron containing previously-drilled holes the size of the anchor bolts, are placed over the studs and laid up against the shell of the separator, overlapping the flanged rim of the vessel as shown. When the nuts are pulled down tightly, the four broad channel iron sections exert ample pressure to prevent the separator from working loose under the strain of continuous vibrations to which the vessel normally is subjected.

SEPARATOR MOUNTING

This method of field installation which combines the advantages of permanence with easy and quick installation, effects a considerable saving on initial field set-ups.

If the base supports do not protect against wind stresses, guying is simpler than full base bolting.

A firm, yet quickly detachable, method of attaching separator to concrete base is shown here, the four channel dogs being held with single bolts, and permitting quick spotting of unit in place.

Fuel Oil Stocks Reduced as Crude Oil Production and Refinery Runs Decline

Operations of the industry continued low in relation to heavy requirements for petroleum products, statistical reports for the week ended December 16 indicated. There were heavy drafts again on stocks of both distillate and residual fuel oils, with crude runs to stills and crude production somewhat lower than in the previous week. Results were better, however, on gasoline, as there was a normal seasonal accumulation of that product in storage, despite some lowering of production. Although crude production was not far below the all-time high of late September, it has continued necessary to draw on crude storage, which sank to 220,258,000 barrels as of December 9, or within a small margin of the 23-year low reached in September.

United States crude production averaged 4,695,000 barrels daily in the week ended December 16, down 9000 from the week before, although 332,000 daily or 7.6 percent above output in the corresponding week last year. Crude runs to stills averaged 4,537,000 barrels per day in the week of December 16, down 15,000 from the week before but 372,000 daily or 8.9 percent above runs in the like week a year ago. Stocks of refinable crude in the country at 220,258,000 barrels December 9 were almost 20,000,000 barrels or 8.3 percent under the level of 240,148,000 barrels for the corresponding date a year ago.

Production of gasoline in the United States, including natural blended at refineries, averaged 2,021,000 barrels daily, down 66,000 from the week before but 270,000 daily of 15.4 percent above output in the like week last year. Stocks of finished and unfinished gasoline were built up at the rate of 267,000 barrels daily in rising to 82,747,000 barrels as of December 16. That amount was 11,058,000 barrels or 15.4 percent more than the 71,689,000 barrels held December 18, 1943.

Production of gas oil and distillate fuel oil averaged 622,000 barrels daily in the week of December 16, up 42,000 daily from the week before but 4000 a day less than output in the like week last year. Stocks were drawn upon to the extent of 289,000 barrels daily in filling heavy seasonal demand and came down to 42,413,000 barrels. That amount was 891,000 barrels or 2.1 percent less than the 43,304,000 barrels held a year previously.

Residual fuel oil production averaged 1,247,000 barrels daily in the week ended December 16, down 28,000 from the previous week but 54,000 a day or 4.6 percent more than production in the like week a year ago. Stocks were cut down during the week at the rate of 168,000 barrels daily and dropped to 59,280,000 barrels. That amount was, however, 1,571,000 barrels or 2.7 percent more than the 57,709,000 barrels reported as of December 18 a year ago.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	47,861	11–14	95,857	1– 3
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	47,187	11–27	72,881	1– 2
1944	[1]4,762	9–30	[1]4,775	9–30	240,992	1– 1	89,162	4– 1	48,863	10–28	64,644	10– 7
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–12
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–13	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	[4]220,623	9– 9	76,302	1– 1	30,232	4–29	49,737	3–18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	247,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,883	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	[1]4,762	[1]4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,426	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,436	8,923	60,458
Dec. 16, 1944	4,695	4,537	.....	14,145	82,747	4,353	42,413	8,727	59,280
Dec. 18, 1943	4,363	4,165	[5]240,148	12,256	71,689	4,379	43,304	8,347	57,709
Change:									
In week	—9	—15	—1,333	—466	+1,867	+297	—2,023	—196	—1,178
In year	+332	+372	—19,890	+1,889	+11,058	—26	—891	+380	+1,571
In year	+7.6%	+8.9%	—8.3%	+15.4%	+15.4%	—0.6%	—2.1%	+4.6%	+2.7%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, December 11, 1943

Sun Produces Billionth Gallon Aviation Gasoline

The billionth gallon of aviation gasoline went through the blending tanks at Sun Oil Company's Marcus Hook, Pennsylvania, refinery, on Saturday, December 16, according to an announcement from the company. Of this total, 75 percent was the highest combat grade 100-octane, and the remainder was approximately equally divided between 91-octane and 87-octane.

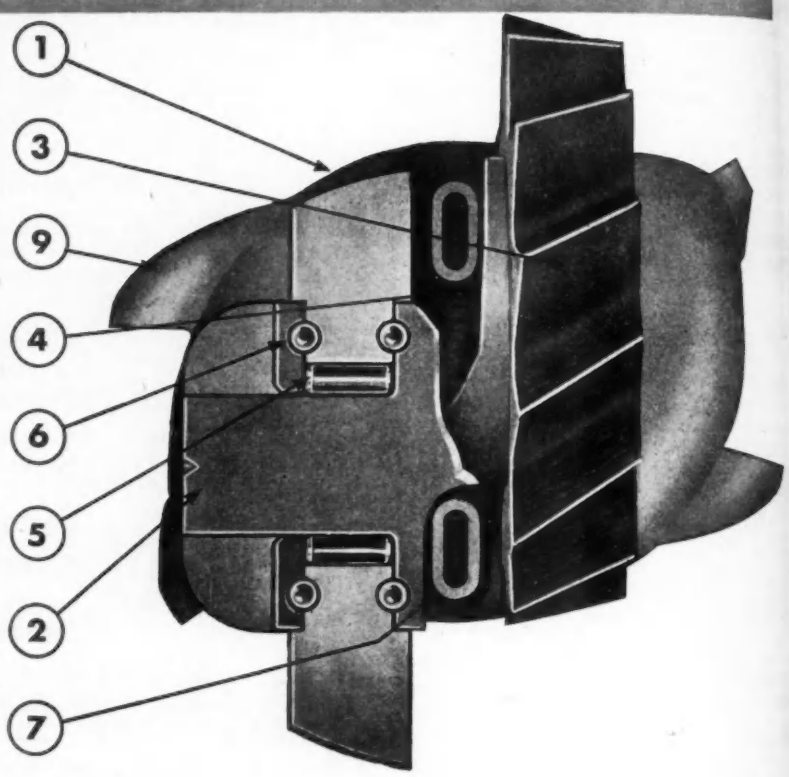
The billionth gallon was withdrawn to be divided into capsules as mementos. Blending of 1,000,000,000 gallons of aviation gasoline since Pearl Harbor is equivalent to 635 gallons every minute since that day, or approximately the amount of gasoline that the average motorist used each year prior to the war.

☆

HARLEY D. COOK, 49, son of Fred S. Cook of the legal department of Sinclair Prairie Oil Company, Tulsa, died December 14, at Amarillo, Texas, where he was tax commissioner for Amarillo Oil Company.

GRANT

ROLLER CUTTER SHALE BIT



This bit has many advantages. Worn cutter assemblies can be easily removed and new assemblies welded in place, a feature especially important for operators in foreign fields. Cutters are extra large and properly hardfaced for long wear which results in fast and economical hole. Flow beans extend to the bottom of the bit, allowing circulation to strike bottom of hole without interference. Circulation is also directed over each cutter. Large side wings assist in holding hole to gauge. Roller bearings for radial load and ball bearings for thrust provide smooth operation and ample strength. Streamline design helps prevent excessive friction and balling up. Lost cutters or other working parts are practically unknown due to the ruggedness of trunnion and cutter assembly.

For complete information on the Shale Bit and other GRANT Tools, check and mail the coupon below.

● Bottom view, half cross-section of GRANT Roller Cutter Shale Bit. (1) Shank. (3) Hardfaced Teeth. (9) Reaming Wings. (4) Washers. (6) Ball Bearings. (5) Roller Bearings. (2) Eccentric Trunnion. (7) Circulation Flow Beans. Cutters are available for soft, sticky Shale; medium Shale and hard Shale.

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Lines from Arcadia Pool Are Authorized by PAW

Eugene Jordan of Oklahoma City was authorized December 1 by PAW to construct four miles of 4-inch gravity and eight miles of 6-inch discharge lines from the Arcadia pool in northeastern Oklahoma County to Oklahoma Pipe Line Company's line between Oklahoma City and Drumright. Jordan is making line surveys but indicated he might transfer the project to Sohio Petroleum Company, now purchasing the oil which is handled by the Oklahoma Pipe Line Company by rack and truck. The pool, discovered this year, produces about 500 barrels of oil from two flowing wells and a pumping well.

Outlet Being Provided for New Mexico Discovery

Humble Pipe Line Company is providing an outlet for Humble Oil & Refining Company's Ellenburger oil discovery in the Dublin area, southeastern New Mexico, by laying a combination line, consisting of 3 miles of 4-inch and 2½ miles of 2-inch, to connect with its Hobbs-Wink 8-inch trunk line.

Guymon Carbon Black Plant Rehearing Is Refused

The Oklahoma Corporation Commission has denied application for a hearing on its recent order authorizing Cabot Carbon Company to construct a channel process carbon black plant near Guymon to process Hugoton natural gas.

The order was issued as an emergency measure on the request of WPB and other federal agencies. The plant will be designed to consume up to 30,000,000 cubic feet of gas per day. Protests that less suitable gas than that produced at Hugoton was available in other fields were lodged by Cities Service Gas Company, Magnolia Petroleum Company, Panhandle Eastern Pipe Line Company and Northern Natural Gas Company.

Plans for Gas Line from Hugoton Pool Revealed

Plans for another natural gas line from the Hugoton pool of Kansas, Oklahoma and the Texas Panhandle are revealed in the application of the United Light & Railways Company and its subsidiary, American Light & Traction Company, to the Securities and Exchange Commission for permission to form a new natural gas company.

The line would deliver gas to communities in Illinois, Iowa and Missouri.

The application to the Exchange had to be filed before formal application could be made to FPC for permission to build and operate the line. The new company probably will be known as the Michigan Wisconsin Natural Gas Pipe Line Company, which will be the first step to the dissolution of the American Light & Traction Company, previously filed with the commission.

Moscow Line Planned

Work to start soon on a 450-mile natural gas pipe line from Saratov to Moscow, which will increase by five times the supply of natural gas for the Russian capital.

Saratov is southeast of Moscow, on the Volga River.

International Developments

Trinidad Company Increases Holdings to 35,022 Acres

Trinidad Petroleum Development Company, Ltd., has acquired leases in the past 18 months amounting to 7266 acres, for a total of 35,022 acres.

Field development drilling by this company has been cut back to 15 completions per year during the war, with only two rigs in service, but plans are to drill at least 50 wells during the first postwar year. Production from the Trinidad properties is about 235,000 barrels per month, as compared with an average of 316,622 barrels per month in 1942 and 1943. During the five years ended July 31, 1944, the company produced more than 16,000,000 barrels.

Guario Field Rig Moved To Guico Field by Socony

Socony-Vacuum Oil Company, C. A., has moved a rig from the Guario field in the San Joaquin area of Anzoategui, Venezuela, to its No. 6 location in the Guico field, 35 miles southeast in the Oficina area. The company's first well in the Guico field was completed as a producer in July, 1944, yielding 1200 barrels per day from two pay zones.

Guico field is a northwest extension of the West Guara field, in which Mene Grande Oil Company holds most of the proved acreage. Creole Petroleum Company is developing a small tract between the Mene Grande and Socony holdings. Guico No. 1 is a mile north of nearest Creole production.

Well No. 2 was at 5941 feet late in August when tools and some 900 feet of drill pipe were lost in the hole. Fishing operations were carried on until the end of November, when sidetracking was started. At the end of August Guico No. 3 was dually completed, with essentially the same combined flow as Guico No. 1. A fourth well was at completion stage in mid-December, when No. 6 was ready to start. Number 5 location will be drilled as soon as rig and derrick from No. 4 can be moved.

Marine Deep Tests Near Baku Production Planned

Construction of at least one marine foundation and drilling platform is reported underway in the Caspian Sea, south of Baku production, and plans are to drill several wells to at least 12,000 feet in preliminary tests of a submarine structure that has been mapped in the sea by seismograph.

Russians claim the mapped structure covers an area in excess of 200 square miles. Numerous underwater seepages have been noted.

Venezuelan Concessions Now 10,000,000 Hectares

Conversion of old concessions in Venezuela, in adherence to terms of the 1943 petroleum law, involved the granting of new titles to 5,711,728 hectares of land which companies desired to retain.

New contracts were effected by July 1. By the end of October applications for new exploration concessions had been accepted covering nearly 2,000,000 hectares, and various companies had made acceptable bids on exploitation parcels in proved or semi-proved national reserve areas totalling approximately 600,000 hectares. During November contracts were negotiated on about 1,700,000 hectares or exploration or exploitation concession properties. At the beginning of December the area of petroleum concession properties in Venezuela amounted to more than 10,000,000 hectares. Many bids, petitions and contracts remain to be processed.

Production in Russia's Emba District Declines

Of eight known producing fields in the Emba district, Kazakhstan region of Russia, four are now reported to have only pumping wells. Their output for the current year is considerably below assigned quotas due to a breakdown in the program of installing electrically operated pumps and failure to provide electric power.

Daily yield of all fields in the Emba district is believed to amount to less than 30,000 barrels per day, most of which is drawn from Dossor, Koschagyl, Komsomolski and Makat fields. Pumping well fields are at Iskine, Kulsary, Bek Beke and Baychonas.

The output of the Emba fields is being sent to Orsk by pipe line. Two refineries at Orsk have a total rated capacity of 40,000 barrels daily. Oil produced in the Samarkand area of Russian Turkestan is sent to Orsk by rail.

24 Wells Now Producing In Casabe Field, Colombia

Completion of two more wells in the Casabe field, rated at 1000 barrels per day each, brings the number of producers to 24.

The property is 15 kilometers west of Tropical Oil Company's La Cira field, on the west side of the Magdalena River, Colombia.

Shell interests, holders of the Casabe concession, plan to ship oil from the field in January, via the Andean pipe line, at an initial rate of 5000 barrels per day. The operators are laying a 26-mile loop to the trunk line.

Yield from Brazil's Bahia Wells Is 150 Barrels Daily

Departmento Nacional de Producao Mineral of Brazil reported that the six producing wells in the three producing areas in the Bahia Trough area are yielding only 150 barrels per day. The government has spent approximately $20,000,000 since 1938 in a search for important fields in Bahia Province.

Canada Test Abandoned

Lion Oil Refining Company, El Dorado, Arkansas, has halted operations on Mary 1, near Inverness, Cape Breton Island, Nova Scotia. The 6870-foot hole has been plugged and the rig is being shipped back to the United States. The company does not plan to conduct more tests in eastern Canada.

U. S. Field Operations

Oklahoma

West Edmond Extended Into Kingfisher County

West Edmond extended; new zone opened near Frederick; test south of West Edmond commands interest; pool may be opened in Osage County.

West Edmond pool was extended 2 miles northwest into Kingfisher County as Anderson-Prichard Oil Company established Bois d'Arc production in Collett 1, CSE NW 25-15n-4w. This is the first oil production for Kingfisher County, which becomes the 46th producing county in Oklahoma.

Production in the Collett well is from basal Bois d'Arc (Hunton) at 7030-40 feet. On initial gauge the well flowed 102 barrels of fluid, 20 percent water and mud, after which it was shut in for 12 hours. When opened, it flowed 15 barrels of clean oil an hour with a trace of salt water. Efforts were being made to shut off the water and upper Bois d'Arc may be tested. The pool, which also touches Oklahoma, Canadian and Logan Counties, has 292 producers, including a gas well and 5 producers in the Bartlesville zone and will likely pass the 300-well mark by the end of the year. Twelve dry holes have been reported.

Tillman County: Gulf Oil Corporation's Copeland 1, NE NW 31-1s-18w, opens a new zone northwest of Frederick. Perforating the upper section of Arbuckle lime at 4568-84 feet, the well filled with 2000 feet of oil in 4 hours and after the bailer was run once it started to flow and was shut in for tanks. Total depth is 4670 feet.

Love County: Across Red River from Illinois Basin Bend pool in Montague, County, Texas, Gulf appears to have another possible pool opener in Benson 1, NE NW 29-7s-3w, which reported good oil stains and odor in Arbuckle lime, topped at 4640 feet and drilled to 4832 feet. The hole is being drilled slowly with cable tools. Magnolia Petroleum Company cored Stewart 1, CSW SW 7-7s-3e, also in the Red River area, and reported slight stains and odor from 3755-62 feet in the Viola, topped at 3752 feet.

Oklahoma County: Operators are closely watching Kerlyn Oil Company's wildcat 5 miles south of operation in the West Edmond pool and leases between the test and West Edmond are reported selling as high as $300 an acre. The test is Classen 1, CNW SE 22-12n-4w and while little information is available, saturated Hunton lime was reported with the test headed for the Wilcox. The play is on the so-called Hunton lime arch which traverses the western part of the county, swinging northwest through Kingfisher and into Major County. East of Northeast Edmond, Gulf set pipe and was preparing to test Beck 1, wildcat in the SW SW SW 15-14n-2w, after coring stained Hunton lime at 5755-5818 feet.

McClain County: The Carter Oil Company abandoned Lamar Ranch 1, CNE SW 28-8n-3w, near Blanchard, on the west edge of the Anadarko Basin, carried to 10,870 feet in Wilcox formation. Cores were cut from 10,837 to 10,843 feet, and sandy shale was recovered with salty taste. Tops showed the Caney cut at 9695, Mayes at 9800, Woodford at 9885, Hunton at 9978, Sylvan at 10,330, Viola at 10,454 and Bromide at 10,740 feet. As a result of this failure Carter also abandoned Durnell 1, CNW NW 33-8n-3w after drilling 50 feet.

Osage County: Another pool loomed southwest of Sperry and north of Tulsa when W. G. Choate et al's Osage 1, NE NE SW 22-21n-12e, cut saturated Burgess sand from 1468-75 feet. When the tools were raised the hole filled with 1000 feet of oil and made considerable gas. Several feet were drilled in formation, increasing the kick, and operators were setting up storage for the well, which is expected to produce around 100 barrels daily.

Stephens County: West of the Robberson pool, Magnolia Petroleum Company appears to have a heavy-oil discovery in Jones 1, SW SE 21-1n-4w. A drill stem test at 5569-96 feet recovered about 1180 feet of oil in Deese sand but when the crew started to set casing a fishing job developed.

Logan County: F. C. Hall was preparing to test Perdue 1, SE SE SW 24-19n-4w, east of the Marshall pool after drill stem test in lower Layton zone at 4862-73 feet showed air in 3 minutes and 40 feet of green oil under 2525 pounds pressure.

Cleveland County: The Oklahoma City-Moore trend will get another test following work order by British-American Oil Producing Company for Jansing 1, NE NW NW 14-9n-2w, 3 miles south of the old Moore pool. The well will test the Wilcox zone. Operator has a block of 9 sections plus some fractional interests, with Cities Service Oil Company owning the north offset. Subsurface control was furnished by 4 dry holes drilled within 1½ miles of the new location.

Missouri

In th Bootheel area of southeast Missouri the Bureau of Mines' Oliver 1, CSW SW 29-22s-11e, New Madrid County, was drilling below 1827 feet in a test of magnetic and gravity anomalies discovered by the Missouri Geological Survey. The test is projected to possibly

Wells completed in United States in Week Ended December 23, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS This Week	Last Week	Cumulative This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	1	1	1	....	33	2
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	6	5
Arkansas	4	....	....	2	6	....	....	....	1	1	7	7	226	249
California	....	....	....	....	....	....	....	....	....	....	....	43	1,976	1,442
Colorado	....	....	....	....	....	....	....	....	....	....	....	2	27	31
Florida	....	....	....	....	....	....	....	....	....	....	....	3	8	5
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	8	4
Illinois	25	....	....	11	36	2	5	....	8	13	51	45	2,044	1,808
Indiana	2	....	....	....	2	....	....	....	1	1	3	4	349	282
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Kansas	7	12	1	8	28	2	....	....	12	12	42	25	1,703	1,710
Kentucky	9	....	....	2	11	....	....	....	4	4	15	9	776	417
Louisiana	5	1	....	2	8	....	2	....	....	2	10	15	768	652
North Louisiana	1	1	....	2	4	....	1	....	....	1	5	4	281	311
South Louisiana	4	....	....	....	4	....	1	....	....	1	5	11	487	341
Michigan	8	1	....	1	10	....	1	....	5	6	16	....	676	589
Mississippi	2	....	....	1	3	....	....	....	1	1	4	8	210	94
Missouri	....	....	....	....	....	....	....	1	1	2	2	....	42	29
Montana	1	2	....	2	5	....	....	....	1	1	6	5	320	234
Nebraska	....	....	....	....	....	....	....	....	2	2	2	....	13	39
New Mexico	7	....	....	....	7	....	....	....	3	3	10	11	413	265
New York	15	....	10	....	25	....	....	....	....	....	25	25	1,238	1,216
Ohio	2	5	....	8	15	....	....	....	....	....	15	17	978	730
Oklahoma	38	1	2	3	44	....	....	....	3	3	47	39	1,878	1,435
Pennsylvania	27	11	15	....	53	....	....	....	....	....	53	50	2,999	2,483
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	9	6
Texas	81	6	3	17	107	2	3	....	15	18	127	129	6,071	4,255
E.Tex.Bor. Co.'s	....	2	....	....	2	....	....	....	....	....	2	1	35	18
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	4	5
Rest of E. Texas	1	....	....	....	1	....	....	....	1	1	2	4	273	248
North Texas	21	....	....	5	26	1	2	....	4	6	33	21	1,382	1,076
W. Central Tex.	....	....	....	1	1	....	1	....	....	1	2	9	414	384
West Texas	30	....	....	2	32	1	....	....	5	5	38	31	1,617	946
Tex. Panhandle	8	....	....	7	15	....	....	....	....	....	15	5	291	196
G. Coast, Upper	2	2	....	2	6	....	....	....	2	2	8	18	597	328
G. Coast, Lower	15	1	1	....	17	....	....	....	1	1	18	24	910	626
Southwest Texas	3	1	2	....	6	....	....	....	2	2	8	13	444	363
S. Central Tex.	1	....	....	....	1	....	....	....	....	....	1	3	104	65
Utah	....	....	....	....	....	....	....	....	....	....	....	....	1	....
West Virginia	4	10	....	1	15	....	....	....	....	....	15	16	952	695
Wyoming	1	....	....	1	2	....	....	....	....	....	2	6	164	122
Total U. S.	238	49	31	59	377	6	11	1	58	70	453	459	23,890	18,802

* Includes distillate wells. † Includes salt water disposal wells.

5000 feet, exceptionally deep for Missouri. Pioneer Drilling Company of Carmi, Illinois, has the contract.

Platte County: Rupert's Fee 1, SE NE NW 22-51n-34w, wildcat southeast of the Parkville gas pool, was completed in the Knobtown sand at 255-62 feet for an estimated 92,000 feet of gas. Total depth is 262 feet.

Atchison County: Claude McQueen's Meyers 1, NE SE NE 25-64n-39w, was abandoned at 1500 feet. The wildcat was about 9 miles east of Fairfax and was 1 of 4 planned by McQueen.

Nebraska

Fuerst Development Company abandoned Dorsch 1, NW NW SW 6-20n-55w, Scotts Bluff County, at 4252 feet.

Kansas

New Hugoton Gassers Good For 250,000,000 Feet

Hugoton gas pool of southwestern Kansas reported 12 new wells good for nearly 250,000,000 cubic feet of gas daily, while the Zenith area of Reno County got a gasser good for 2,500,000 cubic feet per day. The year's previous high mark for gas well completions was for the week ended November 24, when 10 were finaled. Kansas added 3900 barrels of new oil from 7 tests as compared with an all-time low for last week of only 166 barrels daily.

Reno County: Along the northeast trend of the Zenith pool, Mid-Continent Petroleum Corporation finaled Hartnett 1, SW SE SE 30-23s-10w, flowing at the rate of 30 barrels an hour in pay to 3730 feet in a 5-hour test, after which it was pinched back. Skelly Oil Company et al's Theis 1, SE SE NW 31-26s-4w, wildcat southwest of the Hilger pool, was reported checking low. Tops showed Lansing was cut at 2785 feet, Misener at 3359 feet and Simpson at 4038 feet. It is drilling below 4100 feet.

Cimarron County: The Pure Oil Company staked Alliance Insurance Company 1, NE NE NE 9-5n-7ecm, on a 70,000-acre block in the Oklahoma Panhandle 5 miles east of Cox 1, a 19,000,000-foot gasser. Beaver County to the east is due for development next year, following the good showing of Stanolind Oil & Gas Company's Adams Ranch 1, SWc 8-35s-30w, Meade County, which showed for 5,000,000 cubic feet of gas in the Mississippian. Stanolind has been prospecting the area with core drill, gravimeter and seismograph.

Barton County: Phillips Petroleum Company appears ready to open an area southwest of the Hiss pool. Spani 1, wildcat in the NE NW NE 36-20s-14w, topped Lansing lime at 3189 feet and logged good porosity and saturation at 3256-63 feet and after setting oil string at 3254 feet was preparing to test. Aylward Production Company is drilling below 3550 feet in Wissman 4, NW NE SW 31-18s-15w, near the Albert pool.

Barber County: Lion Oil Refining Company reperforated Allen 1, NW NE NE 2-30s-14w, wildcat south of Coats, with 48 shots and the test flowed 2 barrels of oil in the first hour through ½-inch choke. Perforations were at 4512-21 feet and were squeezed and casing reperforated at 4509-13 feet when the hole filled with 700 feet of oil in 12 hours.

Illinois Basin

Richland County Well Rated East Olney Pool Discovery

The Texas Company's Wright 1, NE SW NW 24-4n-10e, in Preston township of Richland County, Illinois, is now rated the discovery well of the East Olney pool after pumping and flowing on initial test 416 barrels of oil in 24 hours from McClosky lime at 2464 feet. The well was treated with 2000 gallons of acid. Initial production was through ¼-inch tubing choke.

Clay County: Wisconsin Oil and Refining Company's Murvin 1, NE SW NE 22-5n-7e, was completed as the discovery of the East Bible Grove pool with initial pump production of 156 barrels of oil in 24 hours. Production is from Cypress sand at 2505-10 feet. Total depth of hole is 2517 feet.

Franklin County: Deep Rock Oil Company's Kirk 1, NE SE SE 15-7s-4e, which opened the North Thompsonville pool, has been officially completed on pump for 110 barrels of oil and three barrels of water daily.

White County: W. J. Lewis and others' Burkhardt 1, SE NE SW 18-5s-9e, wildcat test about 5 miles east of Carmi, is being placed on pump for final tests. When plug was drilled the well filled with 200 feet of oil per hour from Cypress sand at 2835-50 feet.

Clinton County: Goldschmidt and Schiermann's Bergmann 1, SE SE NE 30-1n-3w, wildcat south of the Bartelso pool, is waiting on cement with casing set to the Cypress sand. It may prove a small producer and discovery.

Madison County: Magnolia Petroleum Company's Plocker 1, NE SW NW 10-3n-5w, a wildcat test, has been abandoned as dry at 2986 feet.

Kentucky

W. F. Lacey's Williams 1, 4-Q-20, in Henderson County, has been completed in the Aux Vases sand sand at 2595-2605 feet for 23 barrels of oil daily on pump. Pay also was found in McClosky at 2621-26 feet, the latter figure total depth. It is discovery of the Grassy Pond pool.

Allowable for Michigan's Deep River Field Is Cut

An abnormal drop in bottom hole pressures led to an emergency order, effective December 24, reducing the daily per well allowable in the Deep River field, Arenac County, Michigan, from 300 to 200 barrels. The action was recommended by the State Oil Board. A public hearing is set for January 10, when the order probably will be made permanent. The field, discovered last January, was reduced from 400 to 300 barrels per well September 15 because of declining pressures.

New Mexico

Lea Test Produces from Clear Fork of Permian

Barney Cockburn et al's Wyatt 1, Western Lea County wildcat and 1½ miles southeast of the Maljamar field, was making small heads of 37-gravity oil when agitated with swab and the oil column filled to within 200 feet of the surface.

Production is from sandy-lime below 5-inch pipe at 6800 feet and the well is bottomed at 7020 feet. This zone has been tentatively classified as the Clear Fork of the Permian.

Phillips Petroleum Company's Leamex 4, 1¼ miles north of the east extension of the Maljamar field, apparently missed this zone and was drilling lime at 8050 feet, with top of San Andres called at 4430 feet.

The Texas Company's State 1-A-G, 2½ miles north of the northwest Vacuum pool, was drilling sandy lime at 6912 feet with the Clear Fork as its objective.

Ohio Oil Company's Jones 1, Eastern Lea County wildcat and 3¼ miles southeast of the Hobbs field, logged broken oil saturation and porosity in drilling to water at 5779 feet and will plug back to run test of the upper zone.

The Texas Company's State 2-A-H, ½ mile west outpost for the prolific Turner sector of the South Lovington field, cemented pipe at 4727 feet after registering favorable structural position and was drilling lime at 4879 feet.

West Texas

Andrews Wildcat Records Showing in Ellenburger

Stanolind Oil & Gas Company's University 1-D, Andrews County wildcat and 3¼ miles west of the West Andrews field, entered the Ellenburger at 10,057 feet with some porosity and oil saturation noted in core at 10,065 feet. Another core will be pulled before making drill stem test. The Montoya was called at 9030 feet and Simpson top at 9290 feet.

These Ordovician markers vary from 1219 to 1250 feet higher than those recorded by a 11,322-foot failure to granite situated 3¼ miles west by south. University 1-D is on a 4026-acre block purchased for a cash bid of $900,000 in addition to a deep test obligation, and has indicated production in the Clear Fork and Lower Permian.

Magnolia Petroleum Company's Ralph 1-A, a mile west of the Fullerton field, was drilling lime at 8675 feet, having tested sulphur water in Devonian, topped at 8114 feet with elevation of 3344 feet. This Devonian marker is 350 feet high to Mid-Continent Petroleum Corporation's University 1, Lease 11, second prospective deep completion for the southwest portion of the Fullerton structure. University 1, Lease 11, was perforating pipe set at 8658 feet after logging continuous porosity and oil saturation in Devonian at 8408-8565 feet, with dry lime below 8600 feet.

Magnolia Petroleum Company's Lowe-Bitler 1-C, ¾ mile northwest of production in the Fullerton field, logged first oil stain at 6745 feet for a high structural position, and is running pipe. Chalmette Petroleum Corporation, a unit of the Bay Petroleum Corporation, is starting a test a mile northwest of this outpost.

New Pays: The Texas Company's Hobbs 3-B, 1⅛ miles north of the Crossett 5300-foot Devonian pool, Crane County, is showing for new pay discovery in swabbing and flowing 23 barrels

of fluid. It averaged 15 percent rotary fluid, on 15-hour test, then swabbed ¾-barrel of fluid hourly. Production is from perforations at 3190-3210 feet that is identified as the Glorietta by company's geologist, and the Holt zone by others. A commercial well is anticipated as oil and gas from the upper pay repeatedly appeared in rotary returns in drilling to Ellenburger at 6565-6710 feet, and a large volume of mud and water was absorbed.

Magnolia Petroleum Company's Ralph 3, twin to Clear Fork producer on the west side of the Fullerton field, pumps at a rate of 11 barrels of oil daily from Yates at 3150 feet, although it was seeking gas for boiler fuel from this zone.

Pecos County: Phillips Petroleum Company's Price 1, wildcat that briefly held the drilling depth record, was awaiting acid treatment after developing a nominal show of gas when swabbed down to 11,000 feet in trying to complete from perforations at 11,495-11,525 feet.

Tom Green County: The Texas Company's Garman 1, S.P. Ry. Sec. 85, District 11, was swabbing down for production test with 5½-inch casing cemented at 4910 feet after plugging back from Ellenburger at 5504 feet to 5000 feet.

Ector County: Shell Oil Company and Cities Service Oil Company's T. P. Land Trust 1, wildcat that has eliminated the Ellenburger and Silurian as sources of production, has failed to make a commercial producer from Basal Devonian perforations at 8120-50 and 8065-75 feet. The best showing in the Devonian was at 7889-7936 feet. The Texas Company's T. P. Land Trust 1-B, 4 miles southeast, was drilling chert at 8096 feet with a new lease in effect. This wildcat made a swabbing test at 7914 feet with tubing inside of drill pipe in an attempt to qualify with production from saturation at 7742-52 feet. The Texas Company and Phillips Petroleum Company's Cowden 1, offsetting production in the Ector County sector of the Embar field, was drilling lime at 7171 feet on an 8500-foot depth contract.

Hockley County: The Texas Company's Montgomery 1, 7 miles north of the Slaughter field, was running tubing for production test at 4890 feet in San Andres, topped at 3800 feet. Broken saturation, carrying oil or gas, was logged below 4562 feet, and bailing test at 4885 feet indicated an estimated oil yield of 30 barrels daily without the customary acid treatments.

Upton County: Humble Oil & Refining Company's Parrott 1, prospective discovery from perforations between 7250 and 7575 feet, flows an occasional head of oil between swabbing tests, and continues to average 10 percent rotary fluid. Magnolia Petroleum Company's American Republics 1 cemented protection string of 7-inch casing on bottom at 7829 feet due to loss of returns, and will deepen. Standard Oil Company of Texas' McElroy 1, 6 miles east of the McElroy field, plugged back from 7183 feet to 6850 feet to retest near the 5600 and 6400-foot levels.

THOMAS G. KELLY, 54, oil operator of Sapulpa, Oklahoma, died at Tulsa December 15. He was a native of Findlay, Ohio, and went to Sapulpa in 1911.

JOHN D. CURTIN, former assistant wholesale sales manager for Mid-Continent Petroleum Corporation, has joined Warren Petroleum Corporation at Tulsa, to handle natural gasoline sales.

Central West Texas

New Pool Being Opened in Western Jones County

The Texas Company's McCright 1, Stephens Scallorn survey, is opening a new pool in western Jones County through having swabbed 13 barrels of oil and 4 barrels of water on a 10-hour test, following a 500-gallon acid treatment through perforations at 2536-46 feet. Production is from Noodle lime, topped at 2517 feet. Failures separate this strike from production in the north extension of the old Noodle Creek field.

Taylor County: Great Lakes Carbon Corporation's Gruver-Simmons 1, west offset to its recent Flippen lime discovery in Wm. Bishop survey, entered the Flippen at 2016 feet, being 4 feet low, and set pipe on bottom after logging a nominal show of oil to 2019 feet. The Texas Company's Sayles 1-D, south offset to its Flippen discovery, entered the lime at 2276 feet with a show of oil at 2296-97 feet, and set pipe at 2293 feet.

Coleman County: States Oil Corporation's Burroughs 1, SE SW SE HT&B Ry. 3, Block 1, and 1400 feet northwest of a wildcat gasser in the same zone, flowed 37 barrels natural through ¾-inch choke at 2820-52 feet.

North Texas

Clay County Test Rated Prospective Oil Discovery

The Texas Company's L. P. Hapgood 1, Block 84, Marion County School Lands, is rated a prospective oil discovery on the southwest flank of the Worsham structure, Clay County.

This wildcat entered the Bend lime at 6675 feet, and logged porous oil-saturated lime and conglomerate at 6682-89 feet. Rotary circulation was temporarily lost while drilling the last 5 feet due to the formation being unusually porous. A drill stem test is scheduled. This prospect is 1¾ miles southeast of the Hapgood 3-well pool in the 6000-foot Bend zone, and is 2 miles west by south of the Worsham field, which produces from the latter horizon and also the Strawn.

Anderson-Prichard Oil Corporation's Wood 1-A, Clay County discovery and 4 miles southwest of the Petrolia shallow area, flowed 84 barrels of oil natural on 8-hour test through open tubing from Bend peforations at 5935-50 feet, having plugged back from 6672 feet. This strike involves flank production adjacent to the Petrolia uplift, and is likely the forerunner of a series of small deep pools.

Continental Oil Company's Morris 1, a mile south by east of the West Ross pool, swabbed salt water from Simpson perforations at 5750-76 feet and 5650-65 feet. Oil saturation in Bend at 5402-52 feet and Strawn sand at 4763-87 feet whill be tested in the order named, with the latter rated as the most promising.

Cooke County: The Texas Company's Beasley 1, ⅞-mile west by south of its recent Sivels Bend 6759-69-foot discovery pumper, is higher structurally and failed to produce in the discovery zone, but is showing for a deeper strike from 20-foot pay section in Strawn, topped at 6826 feet. A drill stem test at 6828-36 feet yielded 250 feet of 41-gravity oil with bottom-hole pressure calculated at 3000 pounds. Operations were halted in blue shale at 6892 feet to set pipe after electrical formation survey confirmed the oil zone. Sun Oil Company's Butler 1, east offset to the discovery, has spudded.

Archer County: Phillips Petroleum Company's Bullington 1, Browning sector of the Vogtsberger field, established a new record for Ellenburger thickness in Texas in logging 2567 feet of this zone before reaching igneous rock at 7913-15 feet. Ellenburger was drilled from 5233 to 7228 feet, followed by gradational Ellenburger to 7800 feet. Cambrian, consisting of sand, lime and conglomerate, was logged from this point to 7913 feet. Pipe will be set to test Ellenburger saturation at 5486-91 feet, while the Bend and Strawn are prospective oil producing zones.

Jack County: Hanlon & Buchanan, Inc.'s Ellis-Dubos 10-B, Block 6, J. W. Williams Survey, uncovered first Strawn production on the south edge of the Ellis pool in flowing 633 barrels of 42-gravity oil initial from sand at 3606-11 feet. This shallow zone is productive on the north edge of the structure.

Pressures Show Decline In Cement Pool, Oklahoma

A survey by the Oklahoma Conservation Division under the direction of Tom Bailey, petroleum engineer, in the Medrano oil sand of the Cemnet pool of Caddo County, included 13 key wells and showed that during the six-month period between June and December reservoir pressure declined at the rate of .668 pounds daily, the pressures of the wells averaging 1394.2 pounds.

The oil zone flanks the gas zone across the south and pressures gradually are equalizing in the two major zones, Bailey reported. Production during the June-December period averaged 300 barrels per day per well. Several producers recently developed high gas oil ratios and have been reclassified.

East Texas

Promising Shows Logged by Henderson County Prospect

The Texas Company's Morse 1, Chandler prospect in Henderson County, confirmed its favorable structural position by logging promising shows immediately below the Massive Anhydrite at 9357-61 feet and 9452-62 feet. A drill stem test was to be made at 9491 feet.

This wildcat entered the Georgetown at 6127 feet with elevation of 359 feet, being 190 feet low to Delta Drilling Company et al's Pecan Nursery 1, a 10,714-foot Travis Peak failure to the southwest.

Lone Star Producing Company's Lee 1, 2½ miles north of Athens, failed to indicate production in Travis Peak zone at 8943-9240 feet, and will set pipe to try for completion in thin Rodessa pay. Gulf Oil Corporation's Frizzell 1, Baxter area and third active wildcat for Henderson County, was drilling sandy shale at 8080 feet.

Van Zandt County: The Texas Com-

pany's Stout 1, N. T. Dickerson survey and recent Rodessa strike, flowed 33 barrels of fluid averaging 10 to 15 percent basic sediment and water through small choke from open hole at 8150-61 feet and will attempt to seal the bottom 4 feet with plastic, then acidize. Lone Star Producing Company's Goode 1, deep test near the Van field, entered Georgetown at 3840 feet, then cemented a protection string of 9-inch casing at 3913 feet.

Discovery: Bobby Manziel et al's V. L. Evans 1, J. Stark Survey and 2 miles east of Quitman, pumped 32 barrels of 26.2-gravity oil with gas-oil ratio of 280/1 on official test, giving Wood County a new pool and its first completion in the Sub-Clarksville sand. Preliminary tests prior to official pumping gauge revealed that the well pumps off in 10 to 14 hours. Production is from perforations at 4860-4905 and 4914-44 feet, and the well was plugged back from 6100 feet after proving dry in the Woodbine, topped at 5375 feet. Numerous Paluxy wells in the nearby Quitman and Coke fields passed up indicated small pumpers in the Sub-Clarksville.

Cherokee County: Humble Oil & Refining Company's Stanley 1, 3700 feet south by east of its Larissa pool discovery, proved dry in test of perforations in Travis Peak at 10,560-10,630 feet. Lower Pettit perforations at 10,310-10,336 feet yielded 500 feet of slightly oil-cut mud, and next perforations are due to be made in top of Pettit near the 10,175-foot level.

Shelby County: Southport Petroleum Company's R. C. Poore 1, wildcat 4 miles northwest of Timpson, in the Holmes Byfield survey, has set a string of 5½-inch casing at 6701 feet, total depth being 6910 feet, and is preparing to perforate for a test in the Pettit section. Coring revealed lime and shaley lime sections with showings of gas and some distillate.

Harrison County: Stanolind Oil & Gas Company and Continental Oil Company's J. S. Harris 1, wildcat 3 miles southeast of Woodlawn in the T. Gray Survey, has set 5½-inch casing at 6633 feet, and was scheduled to start a production test of a porous zone in the Pettit, topped at 6605 feet. Total depth is 6870 feet.

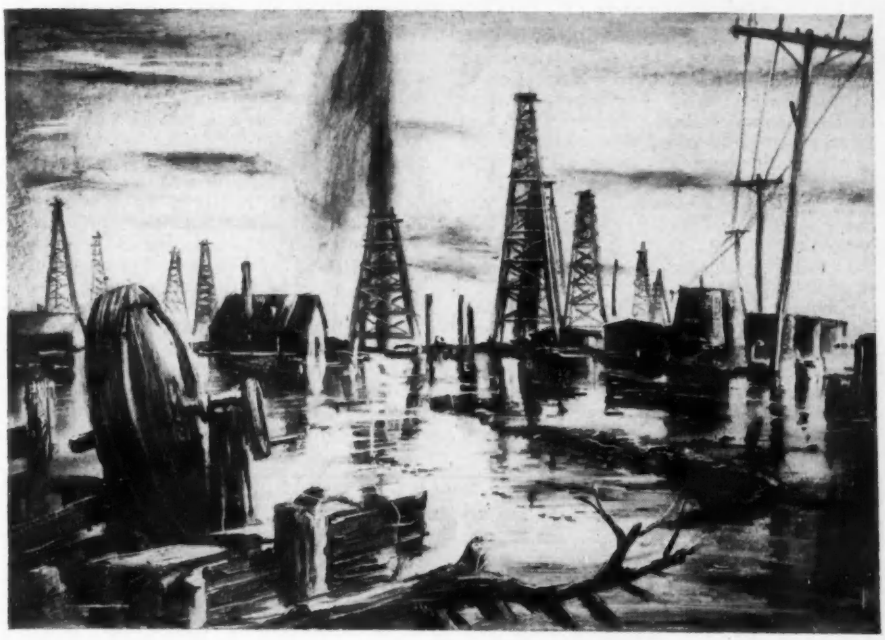
Southwest Texas

Continued Showings Noted In Nueces County Tests

Continued showings were noted in wildcats in Nueces, Brooks and other counties, and wildcat activity remained brisk.

Brooks County: Humble Oil & Refining Company's Dan Sullivan 1, wildcat in the M. D. Floyd Survey, 8 miles southeast of Falfurrias, is preparing to drill after taking another drill stem test. In previous tests the wildcat showed a small amount of clear distillate in the recovery. Casing was set at 7177 feet. The latest test was at 7206-15 feet and was unsuccessful when the seat failed, causing recovery of a little mud.

Humble's Dan Sullivan B-1, approximately 8 miles southeast of the above



WILD WELL — By E. M. Schiwetz

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well, was drilling at 5505 feet in hard sand.

Nueces County: Blanco Oil Company & Al Buchanan's Luling Foundation 1, wildcat in the area 4 miles northwest of Bishop, was coring below 7098 feet after recovering a section of 4 feet of sandy shale with an odor of oil in a core at about 7055 feet.

In the Brayton area, Smith & McBride's Rivers Estate C-1 is drilling below 6800 feet in shale. Showings of gas and condensate had been reported at 6550-66 feet.

Karnes County: Southern Minerals Corporation's Joe Bartosch 1, wildcat a mile north of Falls City, was still cleaning itself through a ⅛-inch choke, making about 80 percent water and 20 percent oil. Tubing pressure is 90 pounds. Total depth is 4711 feet and casing was perforated at 4652-55½ feet.

McMullen County: The Texas Company has announced locations for 2 wildcat tests, the Carrie Aguilare 1, 10 miles southwest of Tilden, in the Nicholas Salinas Survey, scheduled as a shallow test to 3000 feet; and W. S. Goff 1, just under a mile south of the Aguilare 1 and also a shallow test.

Humble Oil & Refining Company's Baker 1, 17 miles southwest of George West, in the M. F. Lowe Survey, was still drilling in the lower part of the Wilcox at 8554 feet in hard shale.

The Atlantic Refining Company's Sam Atkinson 1, in the Loma Alta field, is now below 8700 feet in shale. It is going deeper after setting 7-inch casing at 8499 feet. Tests in the Wilcox at 6896-6902 feet recovered 3700 feet of oil along with brackish water.

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Texas Gulf Coast

Oil Field May Be Opened In Vicinity of Houston

The Texas Company may open an oil field in the Addicks area, west of Houston; The Atlantic Refining Company got a gas well at West Markham, Matagorda County; and a showing of gas and condensate in a Colorado County wildcat, was noted.

Harris County: The Texas Company's Madge Hopkins 1, wildcat in the Addicks area, was in process of making the production test, with the well refusing to kick off. A recent drill stem test with the casing perforated at 7702-08 feet in Cockfield sand showed 1800 feet of pipe line oil, gravity about 41 degrees, and showed working pressure of 250 pounds after being open 4 hours. The casing was then perforated with 24 additional shots at the same point and swabbing started, the line broke and swab was lost in the hole. After recovery, it was swabbed to 6300 feet. Over night the fluid rose to 4350 feet and swabbing was resumed. No formation water has been reported.

Glenn McCarthy's Lemm 1, south of the Spring field and 1½ miles from the lone producer, is drilling below 5600 feet in shale, now only a few hundred feet short of the pay found in the discovery well.

Eltex, Limited, discovery operator in the Spring field, has made location for its Westmoreland Farms 1, west of Bellaire in Harris County, on a 4000-acre lease in the Caleb McKenzie Survey. Operations are scheduled to start at once.

Matagorda County: After testing for some time, The Atlantic Refining Company's Denman-Kountze C-3 in the West Markham area, is shut in with no gauge after completion as a gas well in perforations at 4865-78 feet.

Colorado County: Pan American Production Company's R. L. Williams 1, wildcat in the area 8 miles west of Eagle Lake, is drilling after making a drill stem test in the Wilcox at 8372-90 feet, recovering 30 feet of straw-colored condensate in 14 minutes. The section being tested consists of 9 feet of sand.

Chambers County: Sun Oil Company has opened a new sand in the North Winnie field in completing Rosa Arens 1, northwest of the discovery well, from perforations at 9840-90 feet. It is making an estimated 48,000,000 cubic feet of gas daily, open flow, with some 52.3-gravity condensate. No gauge has been made on the liquid production. Shut-in pressures show 3780 feet on the tubing, while flowing pressure on a ⅛-inch choke was 3745 pounds.

Oil Law Lectures

The South Texas School of Law of the Y.M.C.A. will open the 10th annual series of oil and gas law lectures January 18 to May 10 at Houston.

Instruction is given along practical, non-technical lines by prominent oil attorneys. They will discuss such phases of the industry as leases, royalties, operating agreements, governmental regulations, operating rights, etc. Classes will be held from 7:30 to 9:30 p.m. each Thursday.

South Louisiana

West Tepetate Discovery Shows Good Production

One new pay discovery in South Louisiana has shown excellent production, another is being gauged, and casing has been set in an attempt to extend production in still another area. Interesting locations have been made in several parts of the district.

Jefferson Davis Parish: Barnsdall Oil Company et al's Minos Miller 2, second test in the new West Tepetate field, which opened a new pay 650 feet deeper than that found in the discovery well, made the potential test and flowed 615 barrels daily through a 12/64-inch choke with tubing pressure 2500 pounds, gas-oil ratio 1545-1, and gravity of the oil 40. Casing was perforated with 71 shots at 9168-80 feet. The discovery had produced 794 barrels daily through a ¼-inch choke from perforations at 8516-28 feet.

Vermilion Parish: Union Oil Company of California's State-White Lake B-1, more than ½ mile southeast of the discovery at West White Lake, is testing from perforations at 11,830-840 feet, and made 165 barrels of 32.8-gravity oil in 20 hours through a ⅛-inch choke with tubing pressure 3200 pounds and gas-oil ratio about 3000 to 1. It had recently tested less than 50 barrels daily from 11,820-825 feet, but squeezed and obtained better production lower in the sand. Gravity is also somewhat lower from this point.

On the flank of the West Gueydan dome, The Pure Oil Company's Ferguson-Benoit 2, in the area recently opened to production by the first well on the unit, has drilled to 10,394 feet and is preparing to start coring. It is now considerably deeper than the point from which the first well was completed.

Evangeline Parish: Continental Oil Company's Pardee Company 5, attempting to extend the Redell field, is standing cemented with the 6-inch casing landed at 9730 feet, bottom of the hole.

St. Landry Parish: Humble Oil & Refining Company's Prince 2, most recent completion in the Krotz Springs area, announced final gauge at 129 barrels of 36.6-gravity oil daily through a ⅛-inch choke with gas-oil ratio 1553-1. It was drilled to 10,376 feet and casing was perforated for completion at 9410-13 feet.

Iberville Parish: Humble Oil & Refining Company's Wilberts C-1, in 77-8s-8e, Bayou des Glaise area, is drilling below 9674 feet in hard shale.

Humble's Schwing C-1, in the Bayou Goula area, is drilling below 6537 feet in shale and sand.

IPAA Session Reset

The mid-year meeting of the board of directors of the Independent Petroleum Association of America, set for New Orleans, will be held April 16 to 18, inclusive, instead of April 9-11, as originally announced.

NATHAN JANCO, inventor of a new process for metal casting and affiliated with Centrifugal Casting Machine Company, Tulsa, demonstrated his new process before a meeting of the Mid-Continent Section, ASME, at Oklahoma City.

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North Louisiana

North Lake St. John Field, Concordia Parish, Extended

Extension of the North Lake St. John field in Concordia Parish was of importance in North Louisiana, along with indications for rapid exploitation of the new Delhi field in Richland Parish. The California Company is testing its Catahoula Parish wildcat.

Concordia Parish: The Carter Oil Company's George Murray, in 31-9n-10e, has extended the North Lake St. John field 2½ miles south with completion from Massive sand at 9075-9110 feet. No potential test has been taken, since the well cleaned itself into the pits through a 10/64-inch choke, showing tubing pressure of 1750 pounds, and not making formation water. It has been shut in and will not be tested for potential until storage facilities have been completed. Twenty-six feet of Massive sand was reported logged, in addition to 69 feet of broken sand elsewhere in the Tuscaloosa section.

Richland Parish: Sun Oil Company is the owner of a half interest in the new Delhi field recently opened by Charles H. Murphy, Jr., et al's J. E. Holt 1, and will assume operation of the field under arrangements made prior to drilling the well. Sun has made another location in the area, which is in addition to those made by other operators on the strength of the showing in the discovery well. Sun is constructing a loading rack at Delhi. A pipe line will be built from the discovery well, only 1½ miles away.

The discovery produced 505 barrels of oil daily through a ¼-inch choke from perforations at 3280-90 feet in Tuscalosa sand, and will have an initial allowable of 109 barrels daily.

Roeser & Pendleton and Atlas Oil & Refining Company's Tensas Delta Land Co. 1, wildcat in 1-14n-5e, was preparing to drill below 3950 feet after failure to show oil or gas on electric log.

Catahoula Parish: The California Company's Tensas Delta Monaghan Land Company 1, 6 miles east of Harrisonburg in the eastern part of the parish, was testing the Massive sand section. It had set casing to 8578 feet after running electric log to 9215 feet in this hole which had previously been abandoned. A drill stem test recently showed gas-cut mud but no reported oil, although operators immediately started running casing and erecting tankage.

Claiborne Parish: Ohio Oil Company et al's Taylor, Acct. 4, P-1, deep test in the Haynesville field, tested 379 barrels daily through a 16/64-inch choke from perforations at 8910-20 and 8835-75 feet, after plugging off all the bottom perforations. Previous tests had been made with perforations open at intervals down to 11,025 feet.

ARCHIE M. McCORKLE, 61, vice president of Stanolind Oil and Gas Company, died December 17 on a train enroute from New Orleans to Houston, his home. A native Texan, he had been associated with Stanolind since its organization, in 1930, and prior to that time was with the Dixie Oil Company, of Shreveport, Louisiana, for a number of years.

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Arkansas

Discovery in Strong Area Falls Into Rapid Decline

Two wildcats have been added to the Arkansas exploratory drilling program, while production in a recent discovery showed a rapid decline.

Union County: Root Petroleum Company's Union Saw Mill Company 1, which opened Smackover lime production in the Strong area recently, pumping at the rate of 120 barrels daily from 6320-30 feet, declined in output last week, and is now pumping less than 20 barrels of oil a day, although it is not showing formation water. Some observers believe it may be mudding up and that cleaning out would restore production. It will be swabbed first in an attempt to clean the face of the formation, after which, if unsuccessful in this attempt, it probably will reperforate.

Lion Oil Refining Company's Mill 1, wildcat 6 miles east of production in the El Dorado field, and a Smackover lime test, is drilling below 7374 feet and is scheduled to run electric log at 7400 feet. Smackover lime was topped at 7345 feet, but all cores taken have shown salt water with no showing of oil or gas.

Nevada County: Big West Drilling Company is preparing to start operations on Pauline Mendenhall 1, Smackover wildcat 3 miles east of production in the Troy field in the southeast part of the county. Location is in the northwest corner of 1-14s-20w.

Ouachita County: O. F. Whitaker has made location for Jack Karnes 1, wildcat test 2 miles southwest of the town of Camden, and 9 miles north of production in the Smackover field.

In the south end of Ouachita County, Grady H. Vaughn's J. F. Haltom 1 has shut down for orders after having swabbed for some time from the Tokio formation at 2475-85 feet. It had been recovering about 40 barrels of oil daily, but the continued swabbing is exhausting the oil and apparently bringing in salt water. It probably will plug back for tests of upper sands in the Buckrange and Nacatoch.

Columbia County: Two more dry holes have been drilled in the Dorcheat-Macedonia field, making 3 dry wells for the field. Arkansas Fuel Oil Company plugged I. E. Dodson 1 and M. J. Franks 1. The Dodson well was drilled to 7330 feet in the Cotton Valley without finding showings on electric logging survey, and the Franks 1 drilled to 8512 feet and set casing at 7005 feet for tests of the Cotton Valley which were unsuccessful.

Midstates Oil Corporation's George-Reed Unit 1, latest completion in the Haynesville field Upper Pettit zone, flowed at the rate of 333 barrels daily through a 5/32-inch choke from perforations at 5606-20 feet. Completion was after treatment with 5000 gallons of acid.

HIRAM H. SPAIN, 54, assistant division superintendent, Gulf Coast production of Humble Oil and Refining Company, Houston, died December 17. He had been with Humble since 1916, when he began as a driller in the Davis Hill operations, Liberty County.

Southeastern

Mississippi's Gwinville Field Receives Extension

Mississippi development featured extension of the Gwinville field more than a mile east, indicating a field of considerable extent, and making of further tests lower in the sand in Gulf Refining Company's discovery southwest of Gwinville field.

Jefferson Davis County: Superior Oil Company's Willie Durr 1, outpost a mile east of the Sid Richardson discovery well, Gwinville field, has been brought in from perforations between 7943 and 8025 feet in the lower part of the Eutaw section, and was flowing an estimated 50 barrels of condensate daily along with 3,500,000 cubic feet of gas daily through ¼-inch choke under tubing pressure of 2025 pounds. This indicates a still further extension of the producing area of the field, since comparison of structural position on top of the Eutaw formation shows this well running higher than the discovery itself.

The casing had been landed at 8304 feet after drilling to 9269 feet. The same operators have made location for another well in this area, located in the southwest quarter of 21-9n-18w, approximately 2 miles east of the new producer, which will give still more information on the extent of the field.

Gulf's Mullins 1, 2½ miles southwest of the Gwinville field, has started preparations to perforate lower in the sand from which it was completed last week in an effort to lower the gas-oil ratio. It had been completed in perforations at 9224-34 feet, in Tuscaloosa sand, and made 18 barrels of oil hourly. but was showing a rather high ratio.

Adams County: Humble Oil & Refining Company's Stowers A-1, wildcat in the north end of the county, is drilling below 12,930 feet in hard shale with sandy lime streaks.

The Pure Oil Company's McDowell 2, wildcat south of 'Natchez, is still attempting to test, having recovered water with a little oil after perforating in the 10,273-foot sand for a drill-stem test. Recovery was only 3 percent oil in the water, along with a substantial amount of gas.

Jasper County: Gulf is preparing to make a drill-stem test in Edwards-Bailey Unit 1, wildcat on the Soso prospect in the southwestern part of the county. The well has reported gas odors in the lower 6 feet of sand recovered in a core at 6590-6600 feet.

Georgia

Tropic Oil Company's Gibson 1, wildcat 4½ miles southwest of the town of Lyons, in Toombs County, reported last week as preparing to set casing at a shallow depth, has landed a string of 8-inch pipe at 610 feet, and is standing cemented. It was reported to be planning a test of shallow gas sand found around 450 feet.

Atkinson County: Sun Oil Company's Dodson-Ladson 1, interesting wildcat on a gravity meter prospect 35 miles west of Waycross, has spudded and was drilling below 655 feet, still in surface formations.

Wayne County: The California Company's Brunswick Peninsula 1, is below 4510 feet. A string of 7-inch casing had previously been set at 2535 feet.

Florida

The Pure Oil Company's C. C. Hopkins 2, second test by the company in the area, and located in 21-6s-9e, Gulf County, was setting up rig. The Hopkins 1 has been temporarily abandoned at a depth of 8708 feet.

Collier County: Humble Oil & Refining Company's Gulf Coast Realties 4, in the Sunniland area, is setting up a heavy rig in place of a lighter rig, which is being moved to Highlands County for its G. C. Carlton 1 in the Venus area.

Alabama

H. L. Hunt's J. C. Bolinger 1, wildcat in the area southwest of the Gilbertown field, Choctaw County, is drilling below 3015 feet in shale but has not reported showings. It should be in the upper formations producing in the Gilbertown field.

W. O. Woodward's Mary Green 2, in 31-11n-4w, on the northwest side of Gilbertown field, was testing after drilling plugs from the 5½-inch casing set at 3485 feet and plugged back to 3450 feet.

Clarke County: Bunte Oil Company et al's S. P. Chapman 1, wildcat in 30-9n-3e, set 10¾-inch surface casing at 435 feet, drilled plugs, and is now drilling below 1200 feet in shale.

C. E. VANVLECK, field secretary for Independent Petroleum Association of America, addressed members of the Traffic Club of Tulsa on "The Anglo-American Oil Agreement."

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Rocky Mountain Area

Rangely Field, Colorado, Extension Is Completed

Rangely Field, Colorado, extension completed; Sand Draw field deep test, Wyoming, continues to show saturation; Custer wildcat, Montana, abandoned. Carbon County field opened.

Rangely: Completion of The California Company's McLaughlin-Government 1 in C SE NW of 24-2n-103w, extended the productive area of the Rangely field, Rio Blanco County, northwestern Colorado, 1¼ miles northwest. The well was drilled to 6500 feet and 7-inch production string cemented on the top of the Weber sand at 5960 feet. In the first 23-hour period, the well flowed 344 barrels of oil through a ¼-inch tubing choke, pressure 325 pounds.

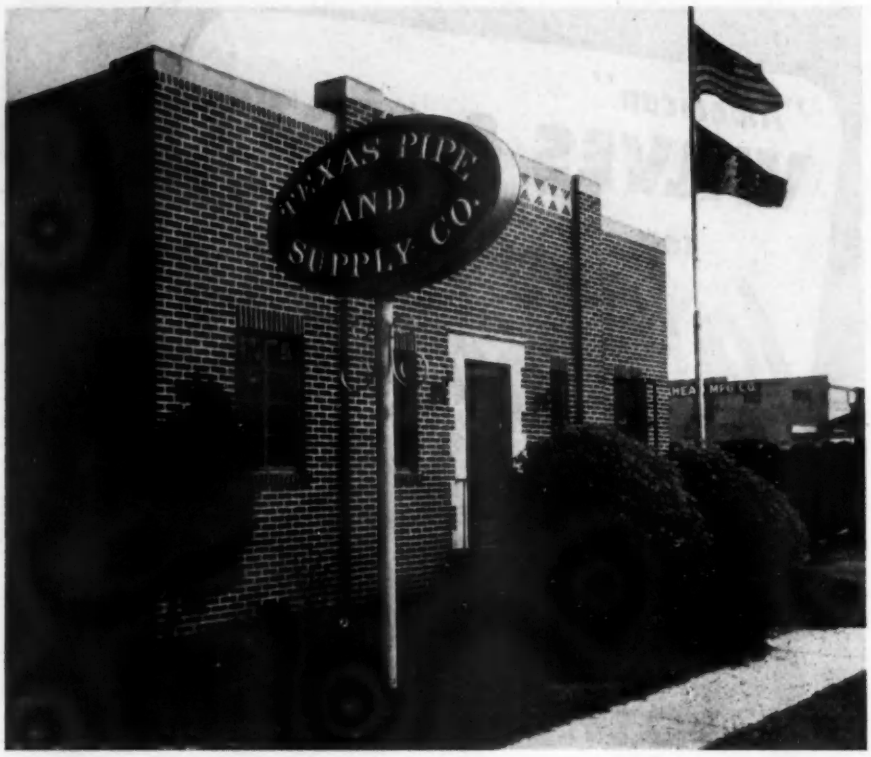
Big Sand Draw: Sinclair Wyoming Oil Company's Unit 1, SW NW NW 14-32n-95w, deep test of the Big Sand Draw field, Fremont County, Wyoming, is running electric log at 7588 feet. It has not been definitely determined whether the well will be carried to the Madison lime. This appears to be the major discovery of the year in the Rocky Mountain region, having penetrated 303 feet of saturated Tensleep sand. Gravity of the oil ranges from 34.6 to 35.5.

The discovery is about 30 miles northwest of Crook's Gap, where Sinclair recently brought in a well at 5250 feet in the Lakota Sand, flowing 1500 barrels a day.

Sinclair is building a pipe line from Crook's Gap to Lost Soldier, 20 miles southeast, where a line connects the Wertz-Lost Soldier production with the refinery at Sinclair. Extension of this line to Sand Draw is planned.

Bailey Dome: Sinclair's Milton-Coleman 1 in 21-26-89, Carbon County, yielded 35 barrels an hour of 34.6-gravity oil on a drill stem test in the Sundance at 5160-5206 feet.

Custer: Carter Oil Company's Government 1, C SW SW 2-6n-32e, wildcat test of the Custer district, Yellowstone County, Montana, was drilled in the Cambrian to 8614 feet without encountering production and has been abandoned. Top of the Cambrian was logged at 8450 feet.



Our wish for all on this, our 4th Christmas since Pearl Harbor is that the New Year may bring victory and lasting peace so that never again will American families know the strife and turbulence of war.

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Civilian Gasoline Cut

Civilians will receive 29,000 barrels a day less gasoline in the first quarter of 1945 than they are getting in the current quarter, under a PAW allocation of 1,144,000 barrels daily for civilian rationing.

The cut from the present allocation of 1,173,000 barrels daily recognizes the usual reduced winter driving, but at the same time points up the continued shortage of automotive fuel due to heavy military demand, it was said.

Bids to Open January 15 On Mississippi Leases

The Mississippi mineral lease commission is to open bids January 15 covering leases on more than 800,000 acres of state lands. Tracts offered are south of Hancock and Harrison counties, described as including water bottoms in Mississippi Sound, all bays, tributaries and estuaries, also marsh lands owned by the state adjacent to bays and sounds, and island and submerged lands owned by the state in Mississippi Sound or the Gulf of Mexico.

Gas Association to Open Offices in Washington

John A. Ferguson, member of the Missouri Public Service Commission for nine years, on January 1 will become executive director of the Independent Natural Gas Association of America and will open offices in Washington, D. C., according to announcement by E. Budrus of Chicago, president.

A graduate of Indiana University, Ferguson joined the Missouri commission in 1935 and attained national recognition for his work with that regulatory body and NARUC activities.

☆

JAMES C. GRAVES of Saginaw, president of Basin Oil Company, was reelected president of the Oil & Gas Association of Michigan. Other officers were also reelected.

BE SURE TO CHECK THE

Trading Post Section

PAGE 75 OF THIS ISSUE

WESTERN CANADA

Alberta Foothills Discovery Placed on Production

With initial tests indicating a new "wet gas" or "oil and gas" field in the South Alberta Foothills, Shell Oil of Canada's No. 4-24-J has completed drilling and was to go on production last week. Drilling was halted at 9947 feet, 329 feet in the Madison limestone .

The bit encountered 120 feet of porous limestone, a 101-foot zone between 9746 and 9847 feet, and 19 feet in narrow porous streaks above that horizon. Black Lime was logged at 9860 feet, followed by Anhydrite and Dolomite from 9888 feet to final depth. This appeared to eliminate possibility of further productive zones below the thick porous.

Two Shell production engineers have arrived from Los Angeles to supervise operations at the well, Shell's first producer in Canada. Tankage and separator were being installed preparatory to production test.

Standard Oil Company of California has staked site for another South Alberta Plains wildcat, Foremost-Province No. 2, in Lsd 4 25-6-12w4th, 2½ miles northwest of the Foremost railway point and 4½ miles northeast of Legend-Province No. 2 and 9½ miles southeast of Legend-Province No. 3, dry holes drilled by Standard.

Hillsborough 1, venture of Cities Service Oil Company and Socony-Vacuum Oil Company in Hillsborough Bay, 8 miles south of Charlottetown, Prince Edward Island, was drilling below 11,500 feet. The wildcat is reported in the Pennsylvanian.

Objectives are the Horton series at the base of the Carboniferous (productive series in the Stony Creek Gas & Oil field in New Brunswick), and the top of the Devonian. The well is on the crest of a deep dome outlined by seismograph.

Cities Service Gardeners Are Awarded Cash Prizes

Victory gardens paid cash dividends to members of the Doherty Men's Fraternity, Chapter 17, with headquarters at Bartlesville, Okla., who entered this year's contest to determine who could grow the most vegetables. Participating in the contest were hundreds of employes of Cities Service Oil Company (Delaware), Cities Service Oil Company, Ltd., Cities Service Gas Company, Cities Service Transportation & Chemical Company, and the Empire Pipe Line Company.

First prize of $300 went to Walter E. Wulf of Davenport, Iowa, second prize of $200 to Joe Bernardi of Miami, Oklahoma, third prize of $150 to J. W. Spence of Lawrence, Kansas, fourth prize of $100 to W. A. Balknap of Bartlesville, and fifth prize of $50 to R. E. Bastion of Oklahoma City. In addition 50 winners in district competitions throughout the United States were awarded substantial prizes.

☆

HARRY C. GEAR, formerly with Lone Star Gas Company, Dallas, Texas, has joined the Midwest Engineering & Tool Company, Neodesha, Kansas, as chief engineer.

U. S. Exploratory Completions

ALABAMA WILDCAT

Choctaw County—Failure: Hunt Oil Company's M. W. Smith Lumber Company 1, cent ne sw 11-10n-4w, abnd 5396 ft.

ARKANSAS WILDCAT

Union County—Failure: R. H. Crow, Tr.'s Randolph Smith 1, 25 ft e of cent ne ne ne 26-18s-15w, slt show gas & oil in Nacatoch 2080-2155 ft, show oil 2443-47 ft, perf 2440-45 ft test sw, abnd 2536 ft.

ILLINOIS WILDCATS

Clark County—Failure: C. Collins' Wilhert 1, nw sw sw 31-9n-12w, abnd 1110 ft.

Clay County—Failure: W. H. Krohn's King 1, nw ne se 20-4n-5e, abnd 2793 ft.

Clinton County—Discovery: Texas Co.'s Altohoff 1, se sw sw 29-1n-3w, pump 5 bbls oil day, pb Cyp sd 953-74 ft, td 2512 ft.

Clinton County — Failure: T. M. Conray's Vogel 1, sw se sw 33-2n-2w, abnd 1339 ft.

Edwards County — Discovery: Tide Water's VanSchoick 1, nw ne nw 18-1n-10e, pump 145 bbls oil day, McCl sd 3214-35 ft, td 3235 ft.

Fayette County—Failure: Paul Doran's Fox 1, se sw se 30-6n-2e, abnd 2136 ft.

Hamilton County—Failure: Texas Co.'s Davis 14, se nw nw 8-6s-7e, abnd 5358 ft.

Jefferson County—Failure: Nat Assoc's Kubiak 1, ne ne nw 24-3s-1e, abnd 2615 ft.

Jefferson County — Discovery: Central Pipe Line's Rose 1, se ne se 4-5s-3e, pump 146 bbls oil day, McCl sd 2973-79 ft, td 2980 ft.

Madison County—Failure: Sohio's Inbs 1, nw se ne 7-4n-6w, abnd 1793 ft.

Montgomery County — Failure: Northern Ord.'s Shenck 1, sw sw se 15-8n-4w, abnd 746 ft.

Let us not forget that Christmas, in the true American sense, is one of the things for which our boys are fighting In that spirit Republic extends you greetings of the season.

REPUBLIC NATIONAL BANK
OF DALLAS

Wayne County—Discovery: Pure's Jones 1, sw sw se 24-1n-8e, pump 48 bbls oil day, Aux Vases sd 3010-23 ft, td 3215 ft.

Wayne County—Discovery: Dolly & Richfield's Owen et al 1, sw se se 5-1n-9e, pump 20 bbls oil day, McCl sd 3222-25 ft, td 3270 ft.

INDIANA WILDCAT

Orange County — Failure: Bedford Dev.'s Brothers 1, nw sw se 19-3n-2w, abnd 1545 ft.

KANSAS WILDCATS

Barton County—Failure: Maguire Industries' Logan 1, se nw nw 35-16s-14w, Cong 3409 ft, abnd 3474 ft.

Ellis County—Failure: Sunray's Huber 1, nwc se 19-12s-20w, Lans 3559 ft, Arb 3958 ft, abnd 3969 ft.

McPherson County—Failure: William Eoke's Voth 1, nec nw 1-21s-1w, Miss 2989 ft, abnd 3027 ft.

Nemaha County—Failure: F. D. Culpepper's Lamporter 1, sw se 3-2s-14e, Hunt 2830 ft, abnd 2900 ft.

Ness County—Failure: Texas Co.'s Boyd 1, swc 24-19s-24w, Miss 4340 ft, Arb 4795 ft, abnd 4960 ft.

Rice County—Failure: Continental's Adams 1, sw nw ne 20-18s-8w, Arb 3446 ft, abnd 3515 ft.

Rooks County—Failures: Phil Han's Voths 1, sec nw 18-10s-18w, Simp 3689 ft, Arb 3725 ft, abnd 3760 ft.

Bridgeport's Atherton 1-A, nec nw 32-10s-19w, Lans 3456, Arb 3809 ft, abnd 3842 ft.

Russell County — Failure: Kiowa Drlg.'s Washburn 1, nw nw sw 19-14s-11w, Cong 3135 ft, Arb 3179 ft, abnd 3199 ft.

Sedgwick County—Failure: Model & Roland's Gorges 1, nw sw nw 8-28s-1w, Miss 3348 ft, abnd 3678 ft.

Stafford County—Failures: Vickers' Grub 1, sw sw se 2-23s-11w, Simp 3672 ft, abnd 3777 ft.

Maguire Industries' Hartnett 1, nec 34-23s-11w, Simp 3819 ft, Arb 3873 ft, abnd 3923 ft.

KENTUCKY WILDCATS

Daviess County—Failure: L. E. Owens' Bickett 1, 17-P-32, abnd 1345 ft.

Union County—Failure: K. D. Holland's Pollard 1, 24-P-19, abnd 2780 ft.

Webster County—Failure: Carter's Melton 1, 3-N-23, abnd 2751 ft.

Webster County—Failure: Sinclair Prairie's Crawley 1, 13-N-23, abnd 2803 ft.

NORTH LOUISIANA WILDCAT

Richland Parish—Oil Field Discovery: C. H. Murphy's J. E. Holt 1, 1980 ft fr sl & 1983½ ft fr el 21-17n-9e, Tuscaloosa sand 3273-91 ft, perf 3280-90 ft, flow 190 bbls oil 12/64-in ch, tub pressure 610, GOR 440-1, td 3422 ft.

SOUTH LOUISIANA WILDCAT

Jefferson Davis Parish—New Oil Sand: Barnsdall Oil Co. et al's Minos Miller 2, e offset to discovery well sect 38-7s-3w, perf csg 7168-80 ft flow 615.6 bbl 40-gr oil day 12/64-in ch, td 9407 ft.

MICHIGAN WILDCATS

Bay County — Essexville Field Extension: United Drillers & Producers, Inc.'s Walraven 1, ne sw ne 16-14n-6e, Dundee 2659 ft, pump 72 bbls, td 3070 ft.

Genesee County—Failure: Tamblyn Development Co.'s Jordan 1, sw sw nw 29-9n-5e, abnd 3113 ft.

Gratiot County—Failure: Sohio's Kellogg 1, n½ se nw 16-10n-3w, abnd 1300 ft.

Isabella County — Failure: Cities Service's Mater 1, nw nw se 2-15n-3w, Dundee lime 3675 ft, sg 3715 ft, abnd 3720 ft.

Mecosta County—Failure: Sohio's Consumers C-1, n½ sw sw 12-16n-10w, Dundee 3474 ft, Monroe 3540 ft, abnd 3815 ft.

Wexford County—Failure: Teater and Americrude's Wexford 1, ne se nw 10-21n-9w, Dundee 3826 ft, abnd 4140 ft.

MISSISSIPPI WILDCAT

Attala County—Failure: Erle P. Halliburton, Inc.'s C. S. Hester 1, ne nw ne 28-14n-5e, abnd 5435 ft in Lower Cretaceous.

MISSOURI WILDCATS

Atchison County—Failure: Claude McQueen et al's Meyers 1, ne se ne 5-64n-39w, abnd 1500 ft.

Platte County—Discovery: Rupert's Fee 1, se ne nw 22-51n-34w, flow 92,000 ft gas, Knobtown, sd 255-62 ft, td 262 ft.

MONTANA WILDCAT

Liberty County—Failure: Texas Co.'s State 1, Marias district, ne se sw 26-29n-6e, 5 bbl sulphur wtr 14 hrs, abnd 2573 ft.

NEBRASKA WILDCATS

Scotts Bluff County—Failure: Fuerst Dev.'s Dorsch 1, nw nw sw 6-20n-55w, abnd 4252 ft.

Hitchcock County—Failure: Texas Co.'s Egle 1, se se sw 29-4n-35w, Basal sd 5001, granite 5014 ft, abnd 5018 ft.

NEW MEXICO WILDCATS

Eddy County—Failures: Brown et al's Shildneck 1, se sw se 28-20s-25e, elev 3548 ft, abnd 834 ft.

Neil H. Wills et al's Hale 2, ne nw sw 12-20s-30e, elev 3308 ft, anhydrite 260 ft, salt 570 ft, abnd 1860 ft.

Lea County—Failure: The Texas Co.'s Knight 1, c ne ne 13-19s-32e, elev 3646 ft, anhydrite 1320 ft, salt 1640-2825 ft, Yates 3030 ft, abnd 4240 ft.

OKLAHOMA WILDCATS

Grady County—Failure: Bridwell Oil's England 1, nw nw se 11-7s-6w, abnd 2721 ft.

Osage County—Failure: A. G. Oliphant et al's Osage 1, se se se 16-25n-4e, abnd 4053 ft.

Murray County—Failure: Fox & Fox's Clinton 1, nw nw nw 9-1s-2e, abnd 6313 ft.

WEST TEXAS WILDCATS

Jeff Davis County—Failure: Stanolind's McCutcheon 1-CT, 1320 ft snl and 300 ft ewl GH&SA Ry. 165, blk 11, core test, abnd 6500 ft.

Martin County — Failure: Gulf's University 1-MM, c ne ne sec 2, blk 7, elev 2919 ft, anhydrite 2200 ft, Yates 3040 ft, abnd 5397 ft.

Reeves County—Failures: Standard of Texas' T. P. Land Trust 1, c se nw T&P Ry. 47, blk 57, Tsp. 2, elev 2957 ft, Delaware lime 2915 ft, sand 2950 ft, abnd after pumping little o&w, td 3144 ft.

Standard of Texas' T. P. Land Trust 2, c se se T&P Ry. 47, blk 57, Tsp. 2, elev 2956 ft, abnd after pumping little o&w, td 3047 ft.

WEST TEXAS WILDCAT DEEPENED

Gaines County—Failure: J. F. Smith et al's Dodge 1, c se sw D&W Ry. 36, blk H, otd 5105 ft, elev 3176 ft, anhydrite 2100 ft, Yates 2890 ft, brown lime 4040 ft, Grayburg 4305 ft, San Andres 4685 ft, abnd 5250 ft.

WEST CENTRAL TEXAS NEW PAY DISCOVERY

Coleman County—Oil Discovery Near 1-Well Gas Pool: States Oil Corp.'s R. M. Burroughs 1, se sw se HT&B Ry. 3, blk 1, 1400 ft nw of gasser in same zone, elev 1924 ft, flow 37 bbls natural ¾-in, Morris (Strawn) sand 2820-52 ft.

LOWER GULF COAST WILDCAT

Refugio County—Failure: Hewitt & Dougherty's K. D. Roche 1, blk 59, Thos. O'Connor sur, 7 mi sw Woodsboro, abnd 6791 ft.

SOUTHWEST TEXAS WILDCATS

Starr County—Failure: W. W. Zimmerman's Mary Hedley Edgerton 1, porc 80, share 66, blk 11, 10 mi n Rio Grande City, 637 ft fr wl & 330 ft fr nl blk 11, abnd 1257 ft.

Webb County—Failure: Dulup Oil Co.'s Bruni 4, blk 75, Browns S/D Albercas gr, 12 mi s of Mirando City, sandy sh with oil odor 1611 ft, abnd 2353 ft.

TEXAS UPPER GULF COAST WILDCATS

Wharton County—Failures: Crown Central Petroleum Corp.'s Stovall et al 1, 364.75-ac lse, Day Land & Cattle Co. sur, 8 mi sw Danevang, abnd 7525 ft.

John G. Mayo & Superior Drilling Co.'s W. C. Hodges 1, 204.75-ac lse in R. Jones sur, 1 mi s of Wharton, abnd 6270 ft.

EAST TEXAS WILDCAT

Hopkins County—Failure: Onyx Ref. Co.-Hollandsworth Dr. Co.'s Cundiff 1, 530 ft nsl and 620 ft fr m/w/e of 40 ac, Simon Derrick sur A-250, 1¼ mi n of Peerless, elev 488 ft, Nacatoch 474 ft, Pecan 1404-1522 ft, Austin 2965-3070 ft, Sub-Clarksville 3128 ft, Woodbine 3718 ft, Dexter 4124 to 4530 ft, Georgetown 4544 ft, Paluxy 4783 ft, (faulted), abnd 4817 ft.

NORTH TEXAS WILDCATS

Cooke County—Failure: Maguire Industries, Inc.'s Hoenig 1, 330 ft out s corner John C. Morgan sur A-151, elev 1056 ft, top Ellenburger detrital 3332 ft, abnd 3510 ft.

Cooke County — Oil Discovery: The Texas Co.'s Gainesville Nat'l Bank 1, 330 ft out nec 510-ac lse, or 1500 ft nsl and 7500 ft wel Thos. W. Ward sur A-1089, mile nw Walnut Bend field, but separated by failure, elev 735 ft, Simpson 5295 ft, Ellenburger 5375 ft, flow 331 bbls natural via 2-in, tp 200-50 and cp 725-zero, Ellenburger 5374-5485 ft, td 5727 ft.

Haskell County—Failure: Humble's Scott 1, 660 ft out swc sec 20, G. W. Brooks sur, elev 1447 ft, abnd 3290 ft.

Young County—Failure: Thos. D. Humphrey et al's Williamson 1, 467 ft out sec TE&L Co. sec 609, elev 1139 ft, Bend 3930 ft, Barnett 4927 ft, Mississippi 4972 ft, abnd 4983 ft.

NORTH TEXAS NEW PAY DISCOVERY

Clay County—Howard Pool Deep Pay: Phillips Pet. Co.'s W. I. Howard-Vera 1-a, 1276 ft wel and 330 ft nsl of blk 44, T. J. Belcher subdiv, ½-mi sw of 5400-ft Bend pumper, elev 901 ft, Bend 5450 ft, Chappell 5796 ft, Mississippi 5803 ft, Ellenburger 5836 ft, pump 75 bbls oil and 1 bbl water, acid 8000 gals through Mississippi perforations at 5803-21 ft, td 6035 ft, pb to 5836 ft.

NORTH TEXAS NEW PAY TEST

Archer County—Shallow Pool Canyon Failure: W. C. Young et al's Albers-Magnolia 2, 330 ft out sec nw-40 ac of blk 117, J. W. Harris subdiv, top Canyon 2243 ft, abnd 2820 ft.

United States Wildcat Starts

ALABAMA

Choctaw County: Hunt Oil Co.'s J. C. Bolinger 1, cent nw nw 33-10n-3w, mir for 4000-ft test.

ARKANSAS

Ouachita County: O. F. Whitaker's Jack Karnes 1, ne ne ne 34-13s-17w, lcn.

Nevada County: Big West Drilling Co.'s Pauline Mendenhall 1, 330 ft s & e of nw cor 1-14s-20w, lcn.

GEORGIA

Toombs County: Tropic Oil Co.'s Givson 1, 4½ mi sw of Lyons, set 8-in csg to 610 ft, drlg.

ILLINOIS

Clinton County: Goldschmidt et al's Bergman 1, se se ne 30-1n-3w, lcn.

Texas Co.'s Buehne 1, nw ne sw 22-3n-4w, lcn.

Edwards County: S. C. Yingling's Smithwick-Bore 1, ne se nw 6-1n-10e, lcn.

Fayette County: Magnolia's Houy Wasmuth 1, nw se ne 24-5n-1e, lcn.

Gallatin County: Carter's Hale 1, nw sw sw 22-7s-9e, lcn.

Hamilton County: Gulf Ref.'s Elckerle 1, se sw se 26-4s-5e, lcn.

Jefferson County: L. O. Thompson et al's Boles 1, nw se ne 7-1s-2e, lcn.

Lawrence County: P. Greauling et al's Abell 1, ne ne ne 36-2n-13w, dr.

KANSAS

Cowley County: Zephyr Drlg. Co. et al's Bosi 1, ne nw ne 13-35s-4e, moving in rig.

Graham County: Helmerich & Payne's Luck 1, nec 13-8s-22w, dr 1600 ft.

Fred Koch's Faulkner 1, sw se se 27-10s-22w, dr.

Kingman County: Magnolia's Callahan 1, nw se se 13-28s-9w, lcn.

McPherson County: J. C. Jansen et al's Robertson 1, swc nw 21-19s-2w, lcn.

Phillips County: Bridgeport's Grau 1-A, sw nw nw 26-3s-19w lcn.

Russell County: M. M. Price et al's Nelson 1, ne ne nw 23-13s-11w, lcn.

Joe Aylward's Mares 1, nw nw ne 13-15s-11w, lcn.

KENTUCKY

Hardin County: Ohio Oil's Gatton 1, 19-P-41, lcn.

Henderson County: Reiley et al's Boswell 1, 19-P-26, lcn.

SOUTH LOUISIANA

Acadia Parish: Union Sulphur Co.'s Mervine Kahn, South Bayou Mallet area, 662.3 ft s & 695.8 ft w of cent 25-7s-1e, lcn for 10,300-ft test.

NORTH LOUISIANA

Richland Parish: C. W. Sharpe's Cochran & Franklin 1, cent nw se 14-17n-8e, moving in materials.

MICHIGAN

Clare County: Pure Oil Co.'s Holbrook B-1, n½ ne se 11-18n-5w, dr.

Clinton County: Smith Petroleum Co.'s Kellam 1, sw ne ne 33-8n-4w, rig.

Gladwin County: Sun Oil Co.'s Ostrander 1, n½ nw nw 15-20n-1w, rig.

Huron County: C. W. Teater's Ignash 1, ne se se 21-18n-13e, dr.

Isabella County: Chartiers Oil Co.'s Girvin 1, n½ ne nw 19-13n-3w, rig.

Mecosta County: Taggart Brothers Co.'s State 2, c ne 14-15n-10w, dr.

Chapman Oil Co.'s Burns 1, n½ se sw 5-15n-9w, lcn.

Ottawa County: Southwest Development Co.'s DeFouw 1, sw sw nw 10-5n-15w, rig.

MISSISSIPPI

DeSoto County: Union Producing Co.'s F. T. Withers Estate 1, 3514 ft fr sl & 687 fr wl 15-2s-9w, lcn for 5000-ft test.

Jasper County: Fohs Oil Co.'s June Lightsey 1, sw se sw 18-1n-13e, bldg drk.

Sinclair-Wyoming Oil Co.'s W. A. Bethea 1, cent se nw 12-1n-12e, lcn for 5200-ft test.

Jones County: Sinclair-Wyoming Oil Co.'s Addie L. Scarborough 1, cent sw se 26-7n-11w, lcn.

Rankin County: C. L. Smith et al's I. J. Broome 1, cent w½ ne sw 14-4n-1e, lcn for 6000-ft test.

MONTANA

Teton County: Union Oil Co. of Calif.'s 1, se se se 21-24n-6w, Willow Creek, lcn.

Toole County: Texas Co.'s Ekholt 1, Devon Prospect, nw sw nw 3-33n-1e, drlg 167 ft.

Texas Co.'s First Nat'l Bk. of Minn., c se se nw 11-34n-1e, Kippen Prospect, lcn.

NEBRASKA

Gage County: Ellis Oil's Bankers Life 1, nw nw sw 16-3n-5e, dr.

Dakota County: Peder Skriver's Armour 1, c nw ne 33-28s-8e, dr 1500 ft.

NEW MEXICO

Lea County: Geo. P. Livermore, Inc.'s Williams 1, c nw ne 7-13s-32e, dr 475 ft.

OKLAHOMA

Caddo County: Shaffer's Cooke 1, ne se ne 25-5n-9w, drlg 745 ft.

Garvin County: Geo. Pace et al's Marrow 1, nw nw ne 33-1n-1w, drlg 800 ft.

Logan County: R. E. Havenstrite's Havenstrite 1, nw ne ne 14-18n-4w, dr 468 ft.

Payne County: Hanlon-Buchanan's Heiring 1, se se 18-19n-2e, woc.

WEST TEXAS

Crockett County: Moore Exploration Co.'s Halff Est. 1-66, 660 ft out nwc e½ of w½ of n½ I&GN Ry. 66, blk 1, lcn 2500-ft cable test.

Garza County: Guy R. & Jimmie Rodgers et al's Ralph Welch-Pure 1, 990 ft wel and 440 ft nsl sec 2, blk 4, K. Aycock sur, mim for 4000-ft Clear Fork test.

Surry County: Geo. P. Livermore, Inc.'s Rollins 1, 2461 ft wel 330 ft snl H&TC Ry. 160 blk 97, lcn 3500-ft cable test.

WEST TEXAS NEW PAY TEST

Andrews County—Means Field Ellenburger Test: Humble's J. S. Means 88-X, 660 ft wel and 761 ft snl PSL 9, blk A-35, lcn 12,000-ft test.

WEST CENTRAL TEXAS

Brown County: Vic M. Gamblin et al's R. W. Smith 1, 630 ft snl and 960 ft ewl HT&B Ry. sec 73, lcn 1200-ft cable test.

Coleman County: Hunter & Hunter's T. J. Hudson 1, 330 ft out sec w½ of D. F. Roddan sur 42, dr 3210 ft.

Palo Pinto County: W. H. Carter et al's K. R. Corn 1, 1300 ft nsl and 330 ft ewl TE&L Co. sec 2006, lcn 2500-ft cable test.

Taylor County: Coke Lupton-Jerome McLester-Ungren & Frazier's H. James-J. McGee 1, sw nw nw T&P Ry. 23, blk 16, lcn 2500-ft cable test.

WEST CENTRAL TEXAS NEW PAY TEST

Stephens County: Consolidated Oil Co.-Premier Oil Ref. Co.'s Mrs. C. Correll 1, 2194 ft snl and 645 ft ewl of G. Newton sur A-128, lcn 5000-ft Ellenburger test.

SOUTHWEST TEXAS

Duval County: J. W. Gorman & McDermott's J. F. Welder 1, J. Poitevent sur, 6 mi ne of Freer, 2310 ft fr el & 2935.3 ft fr sl sec 211, lcn for 3500-ft test.

Tom Graham's J. T. Dinn 1, N. K. Allison sur, 8 mi ne of Bruin, 66 ft s & e of most nw'ly nw cor sur, drlg 1820 ft on 3300-ft test.

Starr County: George H. Echols' Starr County Cattle Co. 1, 10 mi ne Rio Grande City, porc 88, sh 60-6, blk 61, 330 ft fr s & w ls blk 61, lcn for 3100-ft test.

Webb County: Dulup Oil Co.'s Bruni 5, 12 mi s Mirando City, 330 fr n & w ls blk 74, Albercas grt, Brown S/D, blk 74, drlg 1700 ft.

SOUTH CENTRAL TEXAS

Bastrop County: Federal Royalties Co., Inc.'s Andy Alexander 1, 1586 ft fr nel & 660 ft fr nwl Jesse Billingsley sur, 3 mi w of Cedar Creek, lcn for 2000-ft test.

LOWER GULF COAST

DeWitt County: Pure Oil Co.'s Eugene Rice 1, 466 ft fr e & s ls 145.1-ac lse, James May sur, 2½ mi fr Yoakum, lcn for 9500-ft test.

Hidalgo County: Sinclair Prairie Oil Co.'s Grande Callaway 1, 113.49-ac lse, Tex-New Mexico Ry sur 276, 660 ft fr s & e ls of se¼ of nw¼ of sect, lcn for 9000-ft test.

Jim Wells County: H. H. Howell's L. E. Thompson 1, 7 mi se Alice, Los Presnos grt, 467 ft fr w & 2500 ft fr sl blk 1, Roberts & White S/D, lcn for 6000-ft test.

Nueces County: Sam E. Wilson's F. J. Smith 1, Miriano Lopez de Herrera grt, 1 mi w of Calallen, 1163 ft fr sl & 330 ft fr wl lse, lcn 7500-ft test.

Kleberg County: Sam E. Wilson's Robert Kleberg 1, 467 ft fr n & e ls 480-ac lse in sect 10, King Addn No. 3, Pasodizo A. Gutierrez grt, 3 mi sw of Ricardo, reinstated to drill deeper from 8359 ft.

San Patricio County: Magnolia Petroleum Co.'s Melson Heirs 1, 4100 ft fr nel & 330 ft fr nwl of 497.24-ac lse, I&GN sur A-172, lcn for 5000-ft test.

EAST TEXAS

Limestone County: C. W. Killough et al's John Richardson 1, 465 ft ewl and 250 ft n of se line of 139¼-ac tr, or 1300 ft snl and 465 ft wel W. N. Miller sur, 1½ mi n Horn Hill, mim for 5500-ft Travis Peak test.

EAST TEXAS NEW PAY TEST

Leon County—North Buffalo Deep Test: Shell & Lone Star Producing Co.'s Mrs. L. B. Flack 1, 2220 ft from sw and 2295 ft from se lines of W. Martin sur A-607, lcn 12,000-ft Travis Peak test.

EAST TEXAS BORDER COUNTIES

Cass County: Grubb & Hawkins et al's Sally George 1, 1410 ft fr sl & 2200 ft fr el of Reuben Ard sur, ru for wildcat test.

NORTH TEXAS

Archer County: F. L. Harvey et al's W. Duckworth 1-A, 150 ft n and 1500 ft w of nwc blk 11, but in blk 6, J. W. Harris subdiv, lcn 1475-ft test.

Clay County: Perry Browning et al's E. S. Willis 1, 450 ft out swc blk 76, Parker CSL sur, lcn 2500-ft rotary test.

J. C. Jennings et al's I. H. Kempner 1, 330 ft out sec blk 17, Bosque CSL sur, lcn 6000-ft Ellenburger test.

Cooke County: Maguire Industries, Inc.'s Hoenig 2-A, 480 ft from sw and 275 ft from se lines of J. C. Morgan sur A-751, lcn 1400-ft rotary test.

Wichita County: Nixon Pet. Co.'s W. F. Heiserman 1, 2200 ft ewl and 330 ft snl Juan Armendaris sur A-10, lcn 2000-ft rotary test.

Nixon Pet. Co.'s White 1, 660 ft out nwc sec 1, John F. Torrey sur A-315, lcn 2000-ft rotary test.

Young County: James Stewart & Co. Inc.'s L. D. Reger 1, 660 ft snl and 467 ft wel J. Bradley sur A-1371, lcn 3500-ft rotary test.

KENNETH HAGAN succeeds Homer Hatfield as scout for Mid-Continent Petroleum Corporation in the Shawnee, Oklahoma, area.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

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■ FOR SALE: The following used equipment, located at Mt. Carmel, Ill.

1—A-80 T C A Alten Continental Pumping Unit.
5—D T 109 Ideco Pumping Units.
2—10 D Jensen Pumping Units.
1—No. 10 National Pumping Unit.
7—U-2 International Motors.
6—F C U Waukesha Motors.
1—Complete Drilling Rig, including:
1—60 ft. "A" Mast 10-inch pole with drawworks built in powered with Mercury motor.
1—Kohler light plant.
1—Novo water pump.
1—Caterpillar Diesel, 13,000 engine.
1—6 x 12 oilwell pump.
1—17" oil bath rotary table.
525 ft. ⅞" drilling pipe.
2,700 ft. 4½" drill pipe.
1—1,800 gal. fuel tank on skids.
1—550 gal. fuel tank on skids.
Drilling tools, hand tools, 7' x 9' steel dog house.

Available for inspection on O'Meara Bros. lease 1 mile north of Mt. Carmel, Illinois, on Highway No. 1. For further information, contact M. L. Londot, 601 City Bank Building, Shreveport, Louisiana.

FOR SALE

Above pictured Worthington Pump Unit Type 4UBI (compounded), 1750 RPM, 525 GPM., 600 Ft. TDH., powered by 150 H.P. General Electric Motor, Type KT 549 -4 -150 -1800, complete with low voltage starting equipment and oil switches.

Call or write Maxwell Herring
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FOR SALE

■ FOR SALE: One Wilson Twin Motor Draw-Works, powered by two PA-100 International Motors. Unit in perfect condition. Texas Drilling & Work-Over Co., 322 Bankers Mortgage Building, Phone Preston 2472.

HELP WANTED

■ Chemical Engineer to engage in research and development work with major oil company along crude oil producing lines. Would include some field work. Recent graduates of interest. Position offers good future. Give full personal data, experience, and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 30, c/o The Oil Weekly, Houston, Texas.

■ Research Geophysicist with several years experience preferably including field work and laboratory work, to engage in research geophysics with major oil company. In charge of work including evaluation of new ideas and experimental development of same. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 28, c/o The Oil Weekly, Houston, Texas.

■ Engineer or Physicist to engage in study of reservoir performance as related to physical properties with major oil company. Individual should have aptitude and background to enable the mastering of mathemathical analysis of problems in flow of fluids. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 29, c/o The Oil Weekly, Houston, Texas.

■ Wanted by a consulting geophysical organization, Petroleum Engineers with Hayward Mudlogging experience or its equivalent. Immediate openings in Venezuela. Excellent opportunity for advancement to managerial positions throughout the world. Address: Box 36, c/o The Oil Weekly, Houston, Texas.

■ WANTED: PIPING DRAFTSMAN AND CHECKER. Petroleum industry. Chicago location. Experienced high pressure refinery piping layouts. Actual oil refinery piping experience desirable although not necessary. Give complete details in first letter. Address: Box 43, c/o The Oil Weekly, Houston, Texas.

■ Sales representative for Midcontinent Sales Engineering position. Must have had distributor sales experience in specialty products. Must travel. Position offers good future with well known service company. Send full particulars, including personal information, experience, education and salary desired. All answers strictly confidential. Statement of availability required. Adress: Box 44, c/o The Oil Weekly, Houston, Texas.

SERVICES

■ Gravity Meter Survey Service, with or without Seismographic Shooting. Make contracts now for early 1945 season. Address: Box 32, c/o The Oil Weekly, Houston, Texas.

NOTICES

■ CAPITAL SEEKERS—Interested in raising $25,000 or more for a postwar project should write to AMSTER LEONARD, Fox Bldg. Detroit 1, Mich.

■ Wanted Contracts, have gasoline drilling rig ready to go, might sell. Also have shallow production for sale. A. R. Lewis, Corsicana, Texas.

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Squeaks from the Bull Wheel

Begin to Begone

"Darling," he cried in tender voice,
"I have never loved but thee."
"Then we must part," the maiden said,
"No amateurs for me."

Piggish Critters

A little boy from Brooklyn was describing the pig he had seen in the country. "It was in a pen, and it was afraid of the little pigs. The little pigs chased the big pig around in the pen and after a while he fell down from exhaustion and the little pigs ate the buttons off his vest."

Seeing Is Believing

The ship was rolling and rocking and plunging. A very sick sailor leaned over the rail. The captain came along and said: "You can't be sick here."

The sailor regarded the skipper a moment and said: "Watch."

Their Cue

"Now don't forget," said the choirmaster, "the tenors sing this hymn alone until we reach the gates of hell, then you all come in."

A Woman's Way

"How old are you little girl?" asked the bus driver.

"If you don't mind, big boy, I'll pay full fare and keep my statistics to myself."

The View Is Optional

Office manager: "How about showing more discretion in your dress?"

Typist: "Good gosh! Some of you guys are never satisfied."

Think Hard, Boys

There's a rumor that the Washington big-wigs are thinking of combatting the shortage of stenographers by adopting an easier test. The way it is now, they lead an applicant into a room containing a washing machine, a typewriter and a machine gun. If she fails to recognize the typewriter, they won't hire her.

The Bare Facts

Prosecuting Attorney: "You say that when you visited the nudist colony on the night of the murder, you didn't do a thing while there. Don't you realize you are under oath?"

Old fellow: "Sure, I'm under oath, but I'm also over eighty."

Definitions

A bachelor is a man who is afraid to fight.

A low-brow is a person who likes snappy jokes. A high-brow is a person who won't admit it.

A woman with beautiful teeth is one who laughs at her husband's jokes.

An ash tray is something to put cigarette butts in when the room hasn't a floor.

A dancing instructor is a man who has learned to take it on the shin.

The Difference

Life is just one fool thing after another.

Love is just two fools things after each other.

Otherwise, Okay

"Daughter, that fellow who walks with you through the park doesn't look very polished."

"Well, I admit he's a little rough around the hedges."

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Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See page 2808 Composite Catalog.
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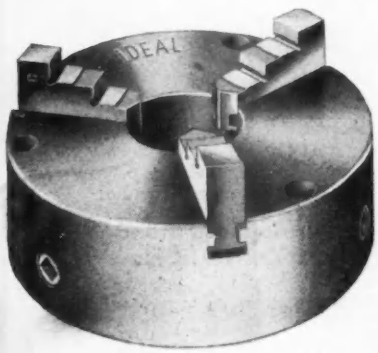
Notes for the Equipment Buyer and User



Three-Jaw Chuck

Three-Jaw Chuck

IDEAL COMMUTATOR DRESSER COMPANY

The Ideal Commutator Dresser Company, 1525 Park Avenue, Sycamore, Illinois, announces a new 3-jaw chuck.

The chuck is precision-made to assure accurate turning. The body is of high grade, fine grain, high tensile strength semi-steel. Rib construction provides ample resistance to shock, load and unusual stress.

Two sets of jaws are furnished, one for internal and the other for external work.

At present, the chuck is available in the 5-inch size only.

A mounting adapter is furnished with each chuck so the chuck may be accurately fitted to the particular lathe on which it is to be used.

Navy Buys Failing Rigs For Drilling in Far North

A portable core drill manufactured in Enid, Oklahoma, by George E. Failing Supply Company soon will be pushing its way through the frozen crust of the Alaskan plains.

The Navy Department in Washington has divulged that several drilling rigs have been purchased from the Failing Company for shipment to the top of the world by train, boat and Navy cargo plane.

Failing Rig

Full details of the Navy's plans for exploration of the mineral possibilities of the extreme northern tip of the continent have not been disclosed but it has long been known that surface indications in northern Alaska justify a thorough test.

The ground where the tests are to be made is constantly frozen to an average depth of 275 feet.

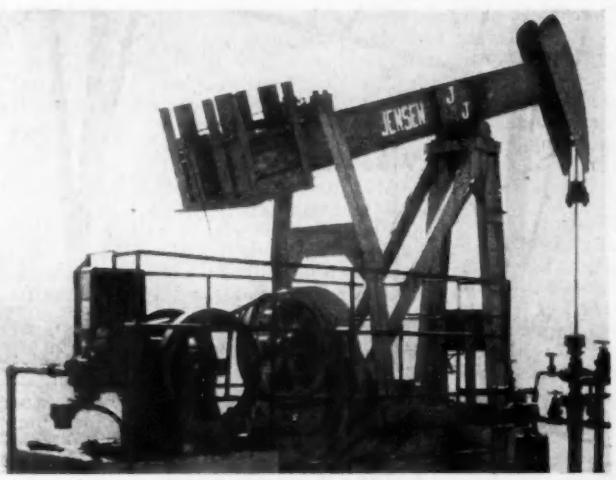
Oil men and geologists have known of the indications of oil in the Alaskan country for several years but the problems of transportation and the need for highly sepcialized drilling equipment have delayed commercial activities.

Many believe that if oil is found in the frozen north it will be in the Cretaceous formations.

Before Pearl Harbor, rigs manufactured by the Failing company were being operated extensively in many foreign countries both by American and European capital. A few days ago, Failing learned that an American oil company was moving into Egypt to resume exploration work. So in a short time the Failing rigs again will be operating at both ends of the world.

The same type rigs are to be used in Alaska and Egypt despite the extreme differences in temperature.

An unusual Christmas wish



Good help, mechanical or two-legged, makes for greater peace of mind for the boss.

So in this December 25th issue of The Oil Weekly, even at the risk of seeming too commercial, we want to say something more than "Merry Christmas."

The nicest Christmas wish we can have for any producer is the hope that he will find out all about JENSEN Pumping Units. We sincerely believe, after 25 years in this business, that any pumping well is likely to be more profitable and satisfactory when JENSEN equipped.

Yes, a JENSEN Unit is good help, and good, dependable help is priceless. Ask your JENSEN dealer, see Composite Catalog pages 1473-6, or write us at Coffeyville.

JENSEN BROTHERS MANUFACTURING CO.

. . . Coffeyville, Kansas, U. S. A.

EXPORT OFFICE: 50 CHURCH STREET, NEW YORK CITY

New Wheland Sales Manager In Employ of Firm 31 Years

The Wheland Company, Chattanooga, Tennessee, announced appointment of Ralph E. Shafer as sales manager, succeeding A. C. Willingham, recently retired.

R. E. Shafer

Shafer has been with the company 31 years. Beginning as a stenographer in the Chattanooga office, he was transferred to the sales department to sell sawmill equipment. In 1928, Wheland took over the pump line of the former Lucey Manufacturing Company, and Shafer was placed in charge of pump sales.

Dresser Industries Adds Three California Firms

Dresser Industries has acquired Day & Night Manufacturing Company, Monrovia, California, Payne Furnace and Supply Company, Beverly Hills, California, and Kobe, Incorporated, Huntington Park, California. The transaction will be accomplished by an exchange of stock and will be effected about February 1, 1945.

Power Plant Catalog

Williams Gauge Company, 3198 Pennsylvania Avenue, Pittsburgh 12, Pennsylvania, has published catalog No. 449, covering equipment for power plants. Each product is illustrated, diagrammed, and fully described. Tables show the entire range of sizes and complete specifications.

☆

S. W. M'GAHA, Lane Wells Company superintendent at Salem, Illinois, has been transferred to the company's Oklahoma City headquaters. He is succeeded by Charles B. Snodgrass.

New plant of Tube-Kote, 2520 Holmes Road, Houston, for the application of plastic coatings to oil field equipment such as sucker rods, steel tanks, line pipe, tubing, casing, valves and fittings. The plastic is a thermo-setting resin of the rubbery polymer type, and is said to be particularly effective as a non-corrosive coating.

Parts Depot Supervisor Named by Caterpillar Firm

Caterpillar Tractor Company, Peoria, Illinois, announced advancement of Merwin T. Farley to supervisor of parts depots, with headquarters in Peoria. He will devote his time to the supervision and development of the parts depot program.

These depots are maintained at Kansas City, Kansas; Memphis, Tennessee; Rensselaer, New York; San Leandro, California; and Spokane, Washington.

Farley has been associated with the company since 1914.

V-Belt Drive Booklet

Multiple V-Belt Drive Association, 140 S. Dearborn Street, Chicago 3, has issued a booklet giving basic advantages of multiple V-belt drive. The booklet has been prepared under the direction of the Engineering Research Committee of the association.

Wins "E" Award

A. Leschen & Sons Rope Company, St. Louis, Missouri, has been awarded the Army-Navy E for high achievement in war production.

Sales Office Opened

Republic Supply Company, Houston, has opened a sales office at 312 Pure Oil Building, 35 E. Wacker Drive, Chicago.

Clark Announces Managers For New Office in New York

T. F. Hudgins

R. R. McCartney

Clark Brothers Company, Olean, New York, has opened an office in the Chanin Building, 122 East 42nd Street, New York, with T. F. Hudgins as export manager. R. R. McCartney will be the New York district manager.

Hudgins was graduated from the University of Kentucky in 1909 and subsequently was instructor in engineering at Kentucky and Purdue universities. He served in World War I and returned with the rank of major. From 1919 to 1922 he was with the National Supply Company in the United States and in London, and from 1922 to 1944, he was with the Cooper-Bessemer Corporation.

McCartney is a graduate of Pratt Institute and before joining Clark Brothers in 1938, was with the Worthington Pump and Machinery Company and Gulf Oil in various engineering and sales capacities.

Val R. Wittich, Jr., who was Clark's export and New York representative, has resigned.

E Award Made

American Meter Company, Philadelphia, Pennsylvania, has been awarded the Army-Navy E award for "great accomplishment in the production of war equipment." The presentation was made to the employes at Town Hall, Philadelphia.

Welding Booklet Issued

The James F. Lincoln Arc Welding Foundation, Cleveland 1, Ohio, has released a booklet on "Setting Up and Operating a Welding Business." Material in the publication consists of three award-winning studies from the Foundation programs.

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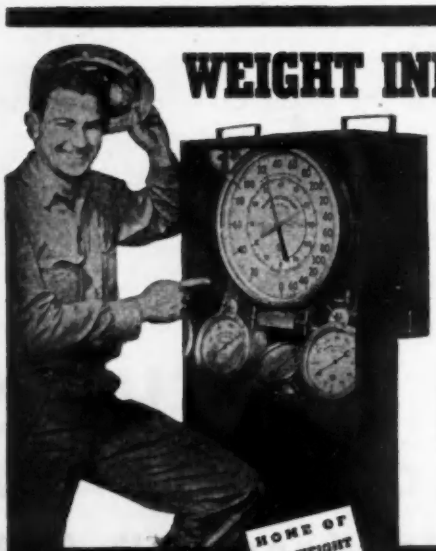
R. B. STANBERY has been named manager of all branch stores and out-of-town resident salesmen for the W. C. Norris Manufacturing Company, Tulsa.



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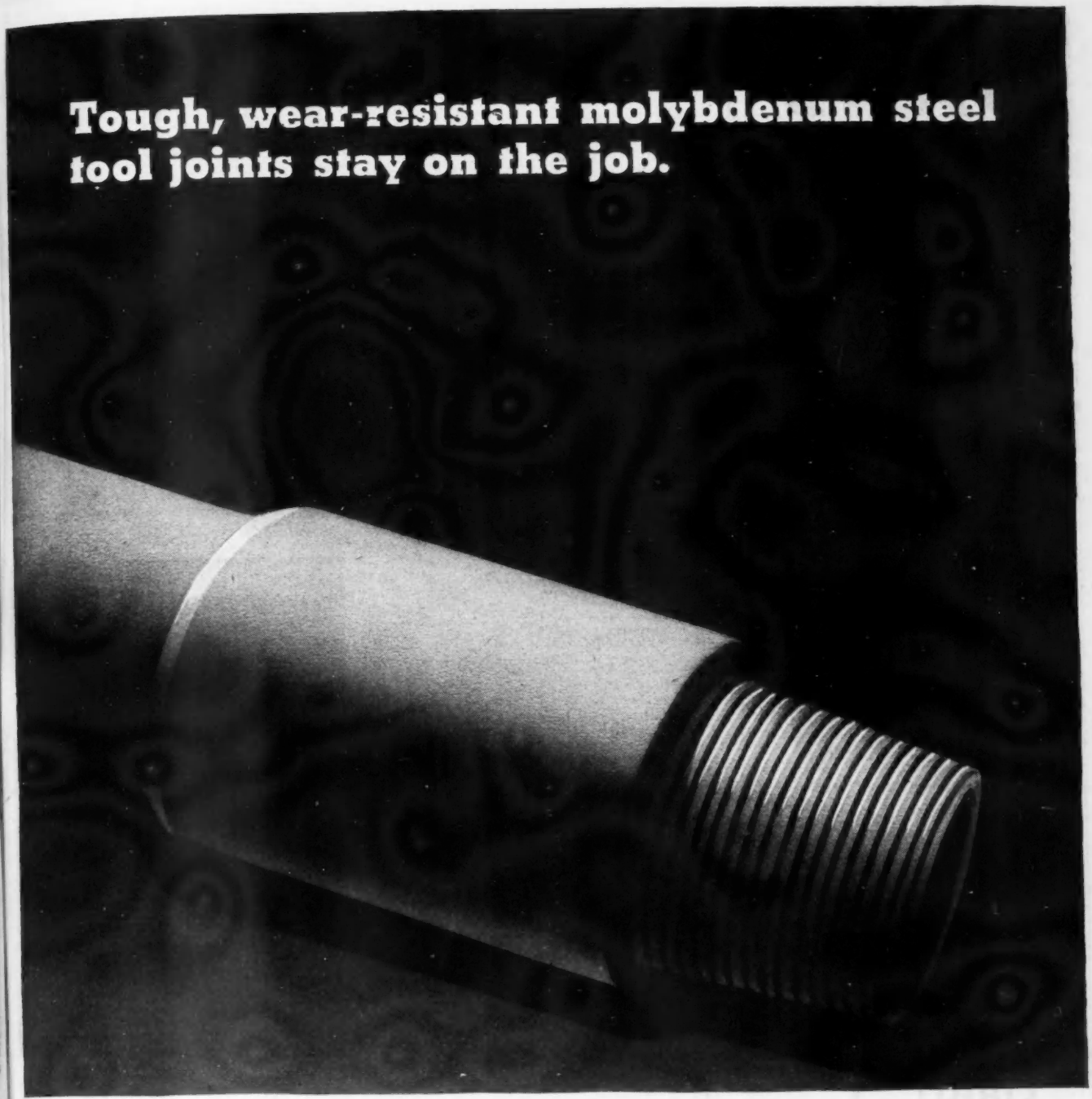

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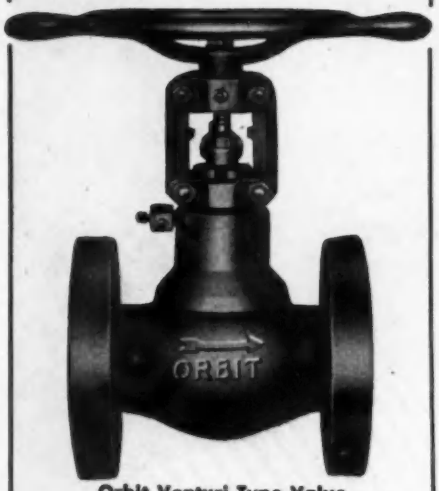

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See 1944 Composite Catalog

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Warehouse 1121 Rothwell, Sect. 15, Houston

Earl F. Warren, Phone 919-W, Alice, Texas

Rex E. Galloup, Phone 6436, Lubbock, Texas

ROSCOE M. SIMPSON, geologist and petroleum engineer for Cardinal Oil Company, San Angelo, Texas, the past 10 years has resigned to join the Midland staff of Permian Basin Sample Laboratory.

J. W. WINGFIELD has been appointed West Texas scout for American Republics Corporation with headquarters at San Angelo, having formerly served in the company's geophysical department at Houston.

WILLIAM G. COREY, former sales manager for Western Gear Works, California Division, and Pacific Gear Works, has opened an office at 973 North Main Street, Los Angeles. He will be associated with the Lacy Oil Tool Company and will continue special work for Western Gear Works.

Advertisers' Index

* Indicates detailed information on products and services included in 1943-1944 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

Alice Pipe & Supply Co. 68
*American Iron & Machine Works Co. 71
*American Roller Bearing Co. 43
*Baker Oil Tools, Inc. 1
*Baroid Sales Division National Lead Co. 13
Wm. M. Barret, Inc. 76
*Bethlehem Steel Co. 57
*The Brewster Co. 33
*Brown Oil Tools, Inc. 56
The Climax Molybdenum Co. 79
The Continental Supply Co. 37
*Fred E. Cooper 39
*Dresser Manufacturing Co. 58
The Eagle-Picher Lead Co. 69
*Emsco Derrick & Equipment Co. 59
Equitable Equipment Co., Inc. 2
First National Bank in Houston 67
Ft. Worth Laboratories 76
*General American Transportation Corp. 4
General Motors Corp. 10
*Grant Oil Tool Co. 62
*Gray Tool Co. 12
Leland Hamner Co. 76
*Hazard Wire Rope Division American Chain & Cable Co. ..... 3 Cover
Houston Laboratories 76
*Hughes Tool Co. ..... 1 Cover
Humble Oil & Refining Co. 14
*Hunt Tool Co. 45
Hyatt Bearings Division General Motors Corp. 10
*Hydril Co. 34-35
Industrial Supply Co. 60
The International Nickel Co. 15
Interstate Drop Forge Co. 31
*Jensen Brothers Manufacturing Co. 77
Jones & Laughlin Supply Co. 5
*Kerotest Manufacturing Co. 51
*Lamtex Equipment Corp. 76
*Link-Belt Co. 16
Lucey Products Corp. 60
*Jas. P. Marsh Corp. 6
*Martin-Decker Corp. 78
*McCullough Tool Co. 22
*Miller Sand Pump Co. 58
*Mission Manufacturing Co. 20
*Lee C. Moore & Co. 9
*National Lead Co. 13
*The National Supply Co. 28-29
Tom Niland Equipment Co. 80
*W. C. Norris Manufacturer, Inc. 18
*Oil City Brass Works 76
*Oil Well Improvements Co. 80
*Oil Well Supply Co. 55
*Pacific Pump Works 7
*Patterson-Ballagh Corp. 8
*Pelican Well Tool & Supply Co. 70
Petroleum Electric Power Association 49
*Reed Roller Bit Co. 3
Republic National Bank of Dallas 73
*Schlumberger Well Surveying Corp. ..... Insert, 40-41
South Texas School of Law 76
Southern Engine & Pump Co. 60
*Standco Brake Lining Co. 76
Texas Electric Steel Casting Co. ..... 4 Cover
Texas Pipe & Supply Co. 72
*Thornhill-Craver Co. 80
Trading Post 75
*Tretolite Co. 11
United States Steel Corp. ..... 2 Cover and 55
*Universal Atlas Cement Co. ..... 2 Cover
*Well Equipment Manufacturing Co. 47
Western Geophysical Co. 69
*Wheeling Machine Products Co. 80

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